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GEM MINING PROSPECTS IN BURMA.

WHAT DO THE RUBY MINES OF MOGOK PRODUCE ?—THE COMPANY'S MONOPOLY—SHANS SELLING RUBIES—THE WORKING AND MISMANAGEMENT OF THE COMPANY—TRANSPORT DIFFICULTIES.

(Concluded.)

IT is to be feared that as regards even testing the capabilities of the Ruby Mining concession, much less proving them, but little can be said of the past year's operations at Mogok. The shareholders will have to possess their souls in patience for some time yet apparently, and "soft words" which "turn away wrath" will be all they will get for their outlay for an indefinite period of the future.

It has often been asked "what amount of rubies are produced at the mines of Mogok, and the answer has varied from "nothing at all," to some impossible value not worth putting on record. In the report from which we quoted above there is an estimate of value required to purchase for the native miners "imported commodities." This amount is put down at £5,000 sterling per annum, so that at any rate that value of rubies must be set apart to meet the one item of expenditure at the mines; but "under the late kings of Burma these mines were a royal monopoly and very closely and jealously guarded from all foreigners and indeed from all natives as well, with the exception of the miners and officials engaged in working them. The king is said to have drawn from them an annual revenue of one and a half to two lakhs of rupees, apart from his absolute right to all stones found that were above a certain weight and quality. This mode of working must have restricted the output of these mines very considerably, and must have caused many of the larger stones to disappear altogether." This is all very indefinite, and it is equally impossible to find out what value if any at all—of large rubies are found now, or were ever found in the time of the kings of Burmah; and at the present day the only thing absolutely decided is that, the Ruby Mining Company are not getting any valuable stones. Whether anyone else is doing so is a mere matter of conjecture; as also if discovered what value is to be attached to them. Sir Lepel Griffin had but little to say on this point, indeed it could hardly have been expected he should have ventured any remarks upon it. "As to the produce of Mogok, it is very difficult to say. I do not believe anybody living knows. A great authority at Mandalay, a dealer, who is accustomed to export in a small way, about a lakh of rupees a year (which it is supposed he smuggles out of our mines) says about fifteen lakhs worth are sold in Mandalay each year, quite independent of Rangoon. He is not in a large way of business but he is a broker for a great many firms. If what he says is true—and I am disposed very much to believe it for I don't think he wishes to deceive me—these native miners must make a great deal of money." It seems at present impossible to get any nearer to a correct conclusion about the outturn of these mines than it was at any time in the past, especially as it is supposed—or rather we may say well-known—that precious stones are not exclusively found in the district of Mogok. Sir Lepel Griffin affected to believe they were so exclusively found, and that his Company had without doubt a monopoly, or the equivalent of a monopoly in working them. He says:—"The Government do nothing except through us—that is our concession. They are not working rubies in Upper Burmah except in one place. They have not conceded—and will not concede—land to other people however much they may think of it. The Chief Commissioner will modify certain rules where necessary. There are said to be good rubies at Sagyan, a little way down the river, which I think may be worked but we have the preferential right. The Government gave us the right of taking it up if we choose, and

we certainly shall choose if the Government wish it worked at all. We shall not let anybody else work it. Even if we raise a subsidiary company to do it it will be worked." This is all very well in its way, but it is more than probable that if other Companies should choose to demand a concession, and applied to the supreme authority for it, they would sooner or later obtain what they asked for. It is not conceivable that in the present days of free trade a monopoly of a valuable trade, such as the ruby trade is supposed to be, should be monopolised by a few shareholders in London. Powerful no doubt the Company is, and large the powers of the Indian Government, but if it were made a public question and pressure brought to bear in the proper quarter there can be no doubt such a monopoly would cease to exist in reality as it has already done on paper. The Ruby Act gives the Chief Commissioner of Burma authority to grant concessions of mining rights to anyone, to whom he may choose to give them, and such option would have to give way to the demands of any powerful body who were in a position to make themselves heard and felt.

In the meantime however until the promises and pretensions of the present Company have been redeemed by the declaration of exceedingly handsome dividends, it is not probable that others will embark upon a similar venture. The future is still before them and they may yet prove a brilliant success and in such case no doubt their example will be followed by other wealthy and powerful syndicates. The market for really valuable rubies is said to have advanced a great deal in price. The Shan-trader said "the price of really fine rubies now is from R1,000 to R1,500 per carat. I saw R8,000 refused in Rangoon a few days ago for a ruby of about 7 carats. The owner said it had been about fifteen years in his family. His mother had bought it for R700. I have got a parcel of stones in the Mandalay Treasury which the Company did not care to purchase at the price I put on them, and they will remain there until I pay the thirty percent duty on the value, or until the value is obtained at auction."

From a private letter published however in one of the local journals we take the following paragraph :—

"Do you know if it is wrong to buy rubies from the Shans? I mean do Streeter's claims come into question? Perhaps this is a silly inquiry, but it is one that several besides myself would like answered, my bosom friend bought a stone last year but made me promise not to mention it. I should say that Streeter's rights are confined to the Ruby Mine tract only. Strangely enough, though the Shans ask such absurd prices for their ponies they part with their rubies for a mere song." The latter statement is by no means singular, for it is commonly made by most persons whose avocations have brought them in contact with the hill tribes of Upper Burma.

The pacification of the Ruby Mines district has made great strides during the past year, at great expense of life and money. Fever of a very fatal description was very prevalent amongst the troops and military police and the mortality was very deplorable. Dacoits in a small way are still frequent, and the road from Thabyetkyin on the river bank to the sanitarium at Bernardmyo, is daily traversed by patrols who take charge of all travellers passing to and fro. Very recently we read in the journals of the day "Three Military Policemen were attacked whilst cutting jungle near Thabyetkyin in the Ruby Mines District, two of them were killed, the third managed to escape" and again :—"News has come to hand of a daring murder being committed in the Ruby Mines, an inspector of police was coming into his district with an armed sepoy orderly and a number of coolies who were carrying the camp kit. Suddenly the inspector heard a shot, and riding quickly up found the sepoy lying dead and his revolver and ammunition gone. The coolies dropped the kit and fled, but subsequently returned."

From many inquiries made from residents in the Ruby Mines district we gather there are always a number of evil disposed persons wandering about—ready to commit robbery and murder whenever an opportunity offers. There are no large sytematised gangs of dacoits at present in the district, but it is not at all desirable to neglect taking every possible precaution when journeying through the country.

It is impossible to say where or when travellers may be attacked, especially when booty in the shape of arms or money is obtainable. That this state of affairs may continue for many years yet to come is highly probable seeing that Mogok lies on the outskirts of the great hill-country reaching far into Chinese territory, inhabited by wild tribes who will for ages to come be continually recruiting bodies of marauders to prey upon their more civilised neighbours, "for 'tis their nature too" as Dr. Watts writes of other animals but a shade more savage than those of whom we are writing.

The deductions we drew from our several interviews with Sir Lepel Griffin and Mr. Kirby, one of the directors of the Company, are expressed in a few paragraphs we addressed to one of the Burma locals and which we now reproduce for the benefit of our readers.

Sir Lepel Griffin has a straightforward way of giving expression to his opinions on public occasions, which carries conviction with it, though his hearers may not always relish the tenor of his remarks. His address to the shareholders at the first half-yearly meeting of the Ruby Mines Company, held in the middle of last year, is an example of this, as also his speech at the Burma dinner of the same time. We gather from his utterances, that he is of the same opinion now as he was then, and is able more clearly to realise the difficulties which beset the initiation of operations at Magok. Taking all the circumstances into consideration, and having seen for himself, and made every inquiry possible during his brief visit, he can, on his return to London, do but little else than emphasise the opinion he expressed six months ago. We should, however, be inclined to think that he is not altogether satisfied with some minor details in the administration of the Company's affairs in Burma. In saying so much we must be clearly understood to be stating our own deductions from the manner, rather than from the expressed tenor of his remarks. He evidently concluded that it was an error sending out too many European assistants when there was absolutely nothing for them to do, and before sufficient preparations had been made for their comfort and subsistence. Then again no doubt a considerable amount of incongruity had arisen from certain operations having been entrusted to men which were not appropriate to their special qualifications. In other words, the work has not been altogether

judiciously distributed amongst the employeès and as a consequence, it had not made such progress as might otherwise have been expected. No special censure could, of course, be passed upon the individual though the system inaugurated at the mines could not altogether merit his approbation. Such, we take it, will probably be the tenor of the remarks with which Sir Lepel Griffin will meet the shareholders at the approaching half yearly meeting; and are only such as could well be expected by any one who has had the opportunity of gathering information from time to time since the commencement of operations in Upper Burma. The question of ultimate and brilliant success as a mercantile venture was one on which (of course) we cannot expect him to be explicit, but we imagine he will have to tone down to a considerable extent the confident tone in which the prospectus of the company was primarily put forward.

We learn that Mr. Kirby who accompanied Sir Lepel Griffin to the Ruby Mines was more inclined to take a serious view of the dangers and difficulties of a trip to Mogok than did the Chairman himself. The latter certainly made light of the journey, while as an Engineer, Mr. Kirby no doubt bore in mind that material as well as men have to be transported along what he termed "a wretched road." In regard to the staff of Europeans employed by the Ruby Mines Company, it would appear probable that there would shortly be a reduction rather than an increase in numbers. Europeans, for some reason or another not apparent to a casual visitor, seem to suffer very greatly in health, and a considerable percentage become physically useless in a very short time. This has been his invariable experience in regard to all large undertakings in India—and the Ruby Mines by no means proves an exception to the rule. Trained natives have eventually to be entrusted with the work—and it is with this class of men that it is completed. He, however, admitted that acclimatised Europeans would have to hold control over the natives, evidently being of opinion that something beside physical energy and endurance was required by those in command. People in England could not possibly comprehend the difficulty —in fact the impossibility—of the transport of the machinery and other material from Tabeitkyin to Mogok until the road was completed, and that was only within the last month or two. Then again the constant sickliness of the ntative workmen, as well as their European superiors, created a difficulty almost as superlative as that of the want of roads and means of transport. It was only now that there was any chance of being able to make a commencement with the search for gems, and as the machinery was got to work no doubt rapid progress would be made.

Taking a general view of the country, and judging of course from what he has seen during the flying visit up to Mandalay and Mogok, he had not formed a very high opinion as to its immediate future. He did not see what there was to be done with a country of such immense proportions and no population, and with but exceedingly small provision for transport. Anything in the way of agriculture would naturally be attempted in the hills more immediately adjacent to the seaports or at any rate, as near to them as the nature of the country and the measure of rainfall would allow.

One point in Mr. Kirby's remarks must not be forgotten. In mentioning the delay that had taken place in forwarding the machinery sent up to Thabeitkyin over a year ago, he pointed out that this machinery was not sent out by the Company, but by Mr. Streeter himself before the Company was formed, and was afterwards purchased by the latter. We leave it to our readers to consider whether this in any way affects the question, our own idea is that it may be classed as a distinction without a difference. If the Company's agents did not want the machinery they should have left it alone. In taking it over, they at the same time, took over the responsiblity of its utility or otherwise.

ROYAL BOTANIC GARDENT, PERADENIYA, IN 1838 AND SUCCEEDING YEARS.

(*From Official Records.*)

(*Continued from Vol. IX., page 835.*)

His Excellency the Rt. Hon'ble the GOVERNOR.

Sir,—I have the honor to forward per this opportunity the "Melon seeds" required by Your Excellency for Mr. Dyke, also (enclosed) the interesting letter from that gentleman, and I beg to return Your Excellency my grateful acknowledgement for the kindness of transferring it for my perusal.

I have the honor to be, Sir, Your Excellency's very faithful Servant,

J. G. LEAR.

Royal Botanic Garden, 31st August 1839.

His Excellency the Rt. Hon'ble the GOVERNOR.

Sir,—I have the honor to acknowledge the receipt of your Excellency's note of 25th instant, and the "40 copies of orchidea drawings (which prove the same that I had the honor to request of your Excellency), also of two packets of "Cape and American seeds" which shall have my particular attention.

I have the honor to be, Sir, Your Excellency's most obedient faithful Servant,

J. G. LEAR.

Royal Botanic Garden, 26th September 1839.

His Excellency the Rt. Hon'ble the GOVERNOR,

Sir,—I have the honor to inform Your Excellency that I could forward the plants required for the Queen's House whenever the border there is prepared for their reception, but I beg to suggest that they had better wait until at least a short continuance of rain could be depended upon. With respect to my tour via Nuwera Ellia and Badulla, I have written Captain Kelson on the subject, agreeably to Your Excellency's wish, who is prepared to see me at any time; that gentleman has also written Captain Rogers, and in the event of an answer from the latter gentleman before that time, I shall proceed to *Nuwera Ellia* on the 4th proximo.

If Your Excellency requires the *evergreens* immediately, I will put them in readiness before my departure from Peradenia.

I have the honor to be, Sir, Your Excellency's most obedient faithful Servant,

J. G. LEAR.

Royal Botanic Gardens, Oct. 30th, 1839.

Memorandum called for by His Excellency the Rt. Hon'ble the GOVERNOR.

Royal Botanic Garden Establishment.

Superintendent, Clerk, Draftsman and Storekeeper' 2 Kanganies, 1 Gardener, 1 Plant Collector and Specimen Maker, 2 Lascoreens, 30 Coolies, 8 Boys.

Cost of Establishment	£52
Artificers' work and other contingencies	4
	£56

per month.

Mr. Lear thinks it but just to himself to add that after collecting what is due to the Establish-

ment for the sale of plants, seeds, &c., since he has taken charge of it, he will be able to forward to the Government Treasury nearly £40.

The cost of the Establishment during the first year of each Superintendent's charge that has been there is as annexed:—

		Year.	£
Mr. Moon	..	1817	1750
,, Walker	..	1825	1639
,, McRae	..	18·6	1563
,, Bi·d	..	1830	1498*
,, Watson	..	1832	1563*
,, Lear	..	1839	720

His Excellency the Rt. Hon'ble the Governor,

Sir,—I have the honor to return the queries which Your Excellency was pleased to put to me, answered as near and correct as I possibly can, and Your Excellency's other directions shall have my best attention.

I have the honor to be. Sir, Your Excellency's most obedient and grateful Servant,

J. G. Lear.

Royal Botanic Gardens, Sept. 18th, 1839.

Memo. for Mr. Lear.

Kandy, September 18th, 1839,

Question.—What is your present salary from this Government?

Answer.—£150 per annum.

Q.—Are ¾ths of the ground of the Botanic Garden, which was under jungle when you became Superintendent, cleared of the jungle and made fit for botanical purposes?

A.—No—half, with much alteration and improvement of that previously kept up by my predecessor.

Q.—Can you, and within what period clear what remains of the jung'e, on the ground, whereon Mr. Moon had planted rare or Ceylon plants with your present force?

A.—No, not at all, without neglecting that which I have already cleared.

Q.—If you can't, what additional force will you require. and what would be the additional monthly cost of labour, and in what time with this additional force can you clear it?

A.—30 men, £22 10s, 3 months.

Q.—About how many acres (at a guess), and about what portion do they form of the whole garden, has Mr. Wright in lease?

A.—65 by the survey, one-half.

Q.—What is the endurance of his lease, its commencement and termination?

A.—6 years, February 1836, 31st December 1845.

Q.—Can you give me a memo. of your monthly establishment and its costs?

A.—Yes, herewith enclosed.

Mr. Lear will please to mark whatever Chinese plants, vines and other plants from London belong to H. E. by a small bit of wood or lead with "Governor" cleared marked on each.

The vegetable and other seed beds can at any time be known that have been sown with seed.

His Excellency the Rt. Hon'ble the Governor,

Sir,—I have the honor to forward herewith the seeds as requested by Your Excellency's letter of the 1st instant, and hope they will prove satisfactory. Those seeds which I had the honor to notice to Your Excellency in Colombo as having been received from Mr. Knight are, of vegetables, a collection limited in quantity to that which would be necessary to prove by experiment what are best adapted to this climate, and for that purpose as suggested by me, Mr. Knight has had the collection made up very select, numerous, and in small quantities, and I think we could not have received them at a better season or in more excellent order. The *fruits*, *palms* and ornamental shrubs and trees are from Mr. Knight's collector in South America, and of that superior character which will justify my saying that it would be difficult hereafter to procure a similar or as good a collection, and certainly nowhere on this Island could they be expected to have that necessary attention which they would receive at the Botanic Garden. I hope therefore that Your Excellency will be pleased to allow me to bring them to account for this establishment, and not distribute them at present through the Island as was suggested by Your Excellency previously.

In the humble and sincere hope that this may meet with Your Excellency's pleasure,

I have the honor to be, Sir, Your Excellency's most obedient humble Servant,

J. G. Lear.

Royal Botanic Garden, 3rd November 1834.

His Excellency the Rt. Hon'ble the Governor'

Sir,—I have the honor to inform Your Excellency of my arrival at Newera Ellia, where I reached on the 4th instant. I saw Captain Kelson on the 5th, who has pointed out to me the land Your Excellency fixed upon for experimental purposes; he has also handed me a survey of the same. I have examined it well, and for the use to which Your Excellency intends to apply it I know of no situation where the choice could be improved. The soil of the *plain* is perhaps not strictly speaking that which general report gives the tea to delight on, neither does it exactly correspond with that recommended for the growth of tea in the popular works of the day, but soil apart (which by draining and otherwise can be greatly improved), every other circumstance seems *particularly* favourable to the production of that article, and eventually I should doubt not of success. Captain Kelson has sent me 8 coolies this morning, and I have commenced clearing on the S. E. side of the forest, jungle where I understood Your Excellency (by description) as the place where Your Excellency wished me to form the nursery for tea. I very highly approve of the spot, and hope soon to have it in readiness, but with respect to the quantity necessary, I should (most humbly) suggest 2 acres as quite sufficient at present for *that purpose*, and as land is apt to deteriorate by exposure, it is the more desirable that no more be cleared than is actually necessary. Should Your Excellency approve of my plan, I shall confine myself to the abovementioned quantity, and when the work necessary upon that is completed, I shall immediately proceed to Badulla as previously directed by Your Excellency. I expect the above work will occupy my time up to the 17th instant, and if Your Excellency has any further commands (independent of my duty) it will afford me the most agreeable pleasure to attend the execution of them.

I have the honor to be Sir, Your Excellency's very grateful and most obedient humble Servant,

J. G. Lear.

Newera Ellia, 6th November. 1839.

Newera Ellia, 23rd Nov. 1839.

His Excellency the Rt. Hon'ble the Governor,

Sir,—I have the honor to acknowledge the receipt of Your Excellency's letter of the 14th instant, and according to its tenor, I beg to hand Your Excellency the result of my investigation of the land referred to,

* Some coffee returned to Government during these years, the amount of which is not ascertained.

The tract pointed out to me by the Mohattal of the district as purchased by Your Excellency, is about 8 miles S. W. of Badulla, and is called Oodooroowawatte, in the Oodapalata of the Yatakinde of Oovah. It is about 4 miles distant from the road leading from Newera Ellia to Badulla, where it would be necessary to form a path, as it is now approached with difficulty by a track crossing several paddy-fields and streams.

It is supposed that a road could be made to it with comparative ease, as a stream of water passing through the land in question has its course in nearly a straight direction towards the main road to Badulla; which road it crosses at about 3½ miles from that place.

The general appearance of the forest as it is approached from the Badulla road, is that of a deep narrow valley with steep sides rising to the summit of bare manna hills; easily accessible at its northern boundary, where the stream just mentioned leaves it.

The quantity of land approaching a level surface, is comparatively very little indeed; being confined to a narrow tract on each side of the stream, where the appearance of the soil is on the surface, blackish, with a substratum rather yellow, and freely mixed with sand or soft stone; and must be of a very superior quality, necessarily arising from its peculiar situation.

There is a greater proportion of surface of easy declivity, where the soil is, as may be expected, of a quality considerably inferior to the former; yet, partaking of the same formation, and this may be considered of an average quality compared with the soils of this country. The extent of both these descriptions may be roughly estimated at about 200 acres.

Of the remainder very little can be advanced to recommend it, being chiefly composed of very sharp or strong steeps difficult in approach and in application of labour. There are also small patches of chena lands having been cultivated by the natives, but the exhaustion of land attendant on their system of cultivation is notorious, especially on slopes which is the land they have chosen in this case.

The remainder is Patana or Manna hills and is unsuited for plantations.

It is barely possible at one visit to form correct ideas of its extent, but I should suppose the whole to exceed 600 acres.

Concerning the supply of labour that may be obtained at this spot, the testimony of the residents and the appearance of the circumjacent country suggest but a scanty or irregular supply; perhaps for 8 months in the year, an adequate quantity may be obtained, but during the remainder or when the scanty population are busily engaged on their own land the supply of native labour cannot be otherwise than defective; if indeed any could be obtained, and this unfortunately happens at the crop season when they are most required.

A regular supply of Malabars may possibly be located there, but of the practicability of this I cannot speak. With respect to the 2 acres of land at Newera Ellia, on returning last evening from Badulla I found that the said quantity is already nearly cleared, and if the weather continues as favourable as at present for 3 or 4 more days, the necessary work upon it for the present will be completed.

I have the honor to be, Sir, Your Excellency's most obedient humble Servant,

J. G. LEAR.

His Excellency the Rt. Hon'ble the GOVERNOR.

Sir,—I had delayed reporting to Your Excellency the condition in which I left the tract of land in process of clearance at Newera Ellia (now some 13 days past) until I should hear how Your Excellency approved that report which was the result of my investigation of and visit to Badulla. But not having yet been honored with that expected and anxious intelligence, I beg forthwith to state for Your Excellency's information that the spot above alluded to is now ready for the reception of tea plants whenever they come to hand. There were 8 Caffre men employed 23 days, and the extent cleared is upwards of 2 acres, a good part of which is burned and entirely cleared of the fallen timber.

I have the honor to be, Sir, Your Excellency's most faithful and obedient Servant,

J. G. LEAR,

Royal Botanic Garden, Peradenia, Dec. 9th, 1839.

His Excellency the Rt. Hon'ble the GOVERNOR,

Sir,—I have the honor to acknowledge the receipt of Your Excellency's letter of the 11th instant, and in answer beg to state as my opinion, that the tea plants intended for Newera Ellia could not arrive *in Colombo* at a better time than the month of March, to allow of their being taken to Newera Ellia *early* in *April*. With reference to the land at Badulla, I have no doubt but that Your Excellency's views, with respect to other produce than coffee, might be carried into effect with promising results but it is worthy of notice that the land objected to for coffee is very precipitate and difficult of access, which circumstance embodies many other objections. I should be most happy to have the honor of accompanying Your Excellency to the spot. Should Your Excellency have decided upon cultivating it, the commencement might be made immediately, but I wish too earnestly for the success of the undertaking, to recommend such a system of procedure as the one contemplated. It is much to be *doubted* and *feared*, that the performance of a native's contract, in a business of that description, would never bear the test of examination, or prove otherwise than conducive of great disappointment and regret.

There is a fine tract of forest land on the range of mountains called Namanakoolakanda, about 8 to 10 miles from Badulla, and the best of it I believe is on the S. W. side, facing the district of Allipoot. I am led to believe it is well suited for coffee cultivation, and that is the only land I know of any extent near Badulla, and there I believe are several thousand acres.

I have the honor to be, Sir, Your Excellency's most obedient humble Servant,

J. G. LEAR.

Royal Botanic Garden, December 14th, 1839.

The Rt. Hon'ble the GOVERNOR, &c., &c., &c.

Sir,—I have the honor to acknowledge the receipt of Your Excellency's letter of the 24th instant, and seeds therein specified.

I think it will be advisable to sow the *tea* seeds at Peradenia and remove them when germinated to Newera Ellia; in the meantime the ground there can be put in readiness for them.

I have some doubts of the success of those seeds, the albumen on examination appears unhealthy, but I shall sow them this morning, and the result will soon be known.

It is perhaps not known to Your Excellency that there is a pure tea tree at Caltura Botanic Gardens, and I have been told there are some young ones also; if so, Your Excellency might secure them. I have received two seeds from the original tree there, one of which has become a plant.

With very grateful acknowledgments, I have the honor to return herewith Doctor Wallich's most agreeable letter to Your Excellency.

Mr. Normansell having arrived, I should prefer remaining at Peradenia until I have given him over charge, after which I shall most willingly revisit Newera Ellia and Badulla, if Your Excellency requires it. I am extremely sorry that I know of no person whom I should like to trust, at liberty to take charge of Your Excellency's property at the latter place. I did not examine the soil on Namanakoolakanda, but I have been well informed of its capabilities for coffee.

I have the honor to be, Sir, Your Excellency's most obedient faithful Servant,

J. G. LEAR.

P. S.—The *whole* of the *tea seeds now swim on the surface* being put in water.

J. G. LEAR.

Royal Botanic Garden, December 26th, 1839.

His Excellency the Rt. Hon'ble the GOVERNOR.

Sir,—I have the honor to acknowledge the receipt of your Excellency's letter of yesterday's date and with respect to the mangosteen and nutmeg plants, the former I believe would succeed well, if put out in a border or bed at the Queen's House, with a little fresh *moderately* wet *soil* about their roots, occasionally watered, and for a week or two sheltered from the strong heat of the sun.

The nutmegs, if I may judge from the general state in which they arrive from the coast, had much better be sent immediately to the Botanic Gardens, where I would see that they received the necessary attention, which they require to have paid them, on their first landing in *boxes*; they would then be also on the way to Badulla, and gaining strength against the time that land was there prepared for them. I think they would not thrive so well, or be so *little* likely to suffer in *Colombo* as in Kandy, if the same attention could there be paid them; but if Your Excellency prefers their remaining in Colombo, my belief is, that they could not be materially hurt (if planted in close beds, where they could be conveniently covered with cadjans from the sun) in a month or two a compost should be made for them, rather free and strong, than rich; a loam, with a mixture ⅓ of good vegetable mould, is the best, and as the plants are supposed to be small (about 6 or 8 inches high) the distance of 9 or 10 inches asunder every way would be quite sufficient for the time above specified.

Mangosteens require the same treatment if the same size, or increased distance in proportion as they are larger, until they are finally planted out, when they should be at least 20 feet asunder.

May I be permitted to enquire of Your Excellency, if the weather is now in Colombo, such as to warrant the safety of the plants required by Your Excellency to fill the borders in the Queen's House Garden, which are ready for dispatch at Your Excellency's pleasure, and accordingly shall have every attention.

I have the honor to be, Sir, Your Excellency's most obedient humble Servant,

J. G. LEAR.

Royal Botanic Gardens, Peradenia December

His Excellency the Rt. Hon'ble the GOVERNOR.

Sir,—I have the honor to acknowledge the receipt of Your Excellency's letter and 2 packets of *tea seeds*, which I am sorry to say (like the former) *swim* in water and otherwise appear somewhat unlikely to vegetate freely. They were sown this morning, and my constant best attention shall be paid to them. With reference to the culinary seeds from "Ronalds," upon enquiry I found that portions of those remaining had been sown by the Pavilion gardener at different times, and in the manner I had directed, but none of them after the first sowing succeeded, which I have but little doubt was owing to their age and bad condition when received, to which must be added the length of time they have been in the Island.

If there are any of them left, I will most gladly see to their being sown agreeably to Your Excellency's direction.

I think Mr. McGregor* would be *quite competent* to the charge at Badulla, if he had 6 months' instructions and experience from a coffee plantation now in its infancy, where he could get an insight of the regular routine of the business as it proceeded, and with a steady communicative person.

I have the honor to be, Sir, Your Excellency's most obedient grateful Servant,

J. G. LEAR.

Royal Botanic Garden, Dec. 31, 1839.

Newera Ellia, October 26, 1840.

The Rt. Hon'ble the GOVERNOR.

Sir,—I have the honor to enclose copy of a letter and a taxed bill for Your Excellency's information. I believe it is not required that the remittance alluded to should pass through my hands. I have also great pleasure in acquainting Your Excellency that I have received the seeds which you were pleased to entrust to my charge, and in a fine plot of ground in Your Excellency's lately purchased property I have sown them, and expect they will do well. The tea plants I am sorry to say are not so flourishing as could be wished; they have had, I find, to contend against a very bad season, and being rather weak when they were planted out, sufficiently accounts for their present appearance. A few of them are looking well which is proof enough that the climate is suitable and that they will eventually succeed. If I can be of any other service to Your Excellency during my stay at Newera Ellia, I earnestly hope you will please to command me.

I have the honor to remain with the greatest respect Sir, Your Excellency's most faithful obedient Servant,

J. G. LEAR.

Government Agent's Office, Colombo 21st Oct. 1840.

Sir,—I have the honor to enclose copy of a taxed bill received from the Surveyor-General dated 15th instant, amounting to £42-10-2⅝, being fee due to Mr. Bagenall for surveying the piece of land at Palampittia in Lower Bulatgama purchased by you for the Right Hon'ble the Governor on the 30th ultimo, and to request that you will have the goodness to remit to this office the sum of £27-10-2⅝ being the balance due on the above account.

I have the honor to be, Sir, your most obedient Servant,

C. R. BULLER,
Agent.

J. G. Lear, Esq., Kandy.

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* Mr. Lewis Macgregor, one of our pioneer planters, who subsequently migrated to California and died there. His brother Roderick was better known in later times. —ED. *T. A.*

MEMORANDUM OF A LOT OF CROWN LAND IN THE WESTERN PROVINCE SURVEYED BY LIEUTENAN BAGENALL, SHEWING THE SUM TO BE CHARGED TO THE PURCHASER OF THE LOT FOR SURVEYING, &c.

Number in the General List.	Date of Authentication.	By whom Surveyed.	Name of Applicant.	Situation.	Extents. Acres.	Roods.	Square Perches.	Rate per Acre.	Fees as per Proclamation of 22nd April 1803. £ s. d.	Proportion of Travelling Expenses. £ s. d.	Total. £ s. d.
0	1840 Sept. 25	Lt. Bagenall	Capt. Lillie	Palampitiya in Lower Bulatgamme	1,024	1	32	9d.	38 8 3 3/8	4 1 11	42 10 2 3/8
										Total ..	£42 10 2 3/8

(Signed) J. T. BAGENALL, Lieut., C. R. Regt.

Surveyor-General's Office, Colombo, 15th October 1840.

"True Copy," W. W. BULLER, Agent.

(Signed) T. B. NORRIS, Surveyor General.

Newera Ellia, November 4th, 1840.

His Excellency the Rt. Hon'ble the GOVERNOR, &c., &c., &c.

Dear Sir,—I have great pleasure in acknowledging the receipt of Your Excellency's letter of the 30th ultimo, with a packet of seeds, all of which shall have my best attention. The great scarcity of coolies here will enable me, I fear, to proceed but slowly with the planting of the piece of ground you have mentioned; I hope nevertheless to complete it before my departure from hence.

My return to Colombo previous to embarking in the "Tigris" I trust will be in time for the removal of she fruit trees intended for Kornegalle, when I thall be most happy to superintend that or any other work Your Excellency may desire. Before leaving this neighbourhood I am anxious to instruct an old servant of mine, who already possesses some knowledge of the matter, in the mode of propagating the numerous and delightful variety of plants that abound in these regions, of which I wish to establish a moderate collection by the period of my return to this colony. Should that event take place as early as I am led to expect, to forward this desirable object, I require the temporary use of about 50 square yards of jungle land, and as it has occurred to me that the same person might be useful in giving an eye to the tea plants, I hope Your Excellency will not think me too presuming by soliciting permission to occupy a bit of land to the above extent, near the tea plantation, where I should feel rejoiced to offer so much of the services of my servant as Your Excellency would require for their protection, as in such case, from the proximity of both occupations, the one could interfere but in a very trifling manner with the duties of the other, and it would tend very materially towards furthering Your Excellency's views on the subject of tea cultivation, which I would most willingly do all in my power to assist.

I have the honor to remain Sir, Your Excellency's most dutiful Servant,

J. G. LEAR,

Nuwera Ellia, November 23rd, 1840.

His Excellency the Rt. Hon'ble the GOVERNOR, &c., &c., &c.

Dear Sir,—I have great pleasure in acknowledging the receipt of Your Excellency's letter of the 21st instant, with a packet of seeds, which, assisted by Captain Kelson, I have sown this morning. The rains which daily threaten to visit this part will, I hope, greatly contribute to their doing well. Captain Kelson has kindly promised to see to the whole garden in the absence of my servant, who I am grieved to say has been obliged to return to Kandy, owing to an inflammation in the chest, proceeding from a cold. I had proposed to leave here myself on Saturday next, but in consequence of intelligence from Colombo to the effect that the "Tigris" will leave sooner than was expected (about the 15th proximo), I have arranged to do so on Wednesday next, and to arrive at Peradenia on Friday, where I shall have to make a stay of about 5 or 6 days before proceeding to Colombo. I trust Your Excellency will pardon the delay in forwarding the memo. on forming a coffee nursery, &c. It is now in preparation, and I am sure I need only offer my indisposition as an apology for its not being much earlier completed.

If I can be useful to Your Excellency on my passage to England or whilst there, I humbly beg you will be pleased to command my most willing services.

I have the honor to remain with the greatest respect, Sir, Your Excellency's very obedient and faithful Servant,

J. G. LEAR.

For His Excellency the Rt. Hon'ble the GOVERNOR, &c., &c., &c.

MEMO :

On forming a coffee nursery in a forest intended for plantation, the first thing to consider is the extent requisite, and as a guide it may be borne in mind that one parah of seeds in the parchment skin will produce 40,000 plants; allowing for a moderate proportion of refuse, 3 parahs would therefore be more than enough for 100 acres. Seedlings from the tender nature of their cotyledons should be cautionally guarded from the full influence of the sun, in their early stage, *i. e.* for the first 6 months;

to do this effectually and at the same time on a simple and expeditious plan, (for 3 parahs of seed) half an acre of forest should have the underwood cleared away and be otherwise partially thinned, leaving only sufficient trees to ensure a light shade to the *soil* beneath them which should be *roughly* turned up with mamoties without regard to roots. In this state the seed should be sown upon it broadcast, and afterwards covered in with a rake breaking the lumps of earth &c. Should any seed appear above the surface, after this operation, they may be buried by a cooly going over the ground with a small stick and making a hole by its side so as to allow it to fall in. Judgment should be next employed in selecting proper and convenient sites for transplanted nurseries; they should be so chosen as to avoid as much as possible unnecessary waste of labour in removing them hence to their final situations. On every 100 acres three sites may be fixed upon of a little more than ¾ acre each, which being stocked with the now rising plants, at one foot asunder would be sufficient for that quantity. The soil for this purpose should be *entirely* cleared of brushwood and forest and as much of roots as may not prove too expensive and laborious; it should be also well turned up and renovated. If the seeds have been sown in November or December, the seedlings will be fit to transplant during the rains in April and May; care should be observed in raising them with a spade, they should not be forcibly drawn from the soil, but shaken out preserving all the fibrous roots; in selecting them from the seed ground, avoid any that are very weak; with a sharp knife shorten the tap root* and also all long spreading lateral roots; they will be now ready for planting out, the ground having been prepared as directed, lines should be next drawn (with a spade),† a drill or small trench should be made by its side, and by hand the plants should be placed against it 1 foot apart, drawing and lightly pressing the loose and removed soil against them as the work proceeds; care should be taken that they are not placed deeper in the earth than about one inch below what they were originally. By this process the use of the dibble is dispensed with, which is at all times objectionable when it *can* be avoided; there is no occasion for bedding as is commonly practised in this work. By following the preceding remarks, the now transplanted seedlings will be fine plants and fit for final removal in four months. In planting an estate, various plans are chosen and adopted by different individuals, who have perhaps equal pretentions to the right one, each following that which long custom may have dictated, and upon which they are capable of forming correct calculations, and this is so far right, but it shows an evident want of a general system founded upon enquiry into the clear truths of vegetable Physiology where it may be learnt that whatever course is found to be most consistent with the laws of nature is the most preferable one to pursue, and wise experience in Horticulture has most fully proved the fact. This is advanced merely to show the absurdity of that unsparing and unjustifiable mutilation which cannot be avoided in preparing and planting stumps. Seedlings are always preferable, and it is well to observe here that *much* depends upon the choice of *seeds*; they should be gathered when perfectly ripe, and if possible from young and vigorously healthy trees.

In planting, it is advisable to have holes made, and they should be rather wide than deep, say 9 or 10 by 16 inches.

J. G. LEAR

Peradenia, December 7th, 1840.

* Many persons offer objections to the practice here recommended, but the motive for observing it in all establishments where transplanting is carried on to any extent, is obvious, the simple operation of cutting off the tap root, merely weakens an unprofitable part to strengthen useful ones, the lateral and fibrous roots are thrown out more numerously and with greater vigour, and it is from *these alone* that a tree derives its principal support from the earth. The tap root is rather an elongation of the stem downwards, and is a conductor of the returning sap that has been separated in the body of the plant from the necessary secretions formed for its growth (length is not an object in this process), therefore, in addition to other reasons, by chequering the probability of its penetrating a subsoil injurious to its health, we do a service to the plant. Tap roots often decay in bad subsoil and thus a disease is ingendered, which by its natural tendency to ascend, will in times destroy the plant; hence it is want of health and not deficiency in length or dimensions of a tap root (*a*) from which (if from this source at all) the plant receives its injury. It may be questioned, for what has nature provided a tap root? And much may be said in favour of its preservation *when* nature *is left alone*, but *she only* can know the true circumstances that call for its use, and when art is resorted to, its entire abandonment can be reasonably defended on a due consideration of *known* consequences.

† The word came before us as "shade," but we do not quite understand Mr. Lear recommending the use of a spade, an "agricultural implement" seldom used in the cultivation of coffee in Ceylon.—ED. *T. A.*

a Cutting this root when plants are *old*, such as make stumps, makes a wound that seldom *entirely* heals; the same operation performed when the plant is *young* or overgrown and scarcely leaves a cicatrice.

Colombo, December 18th, 1840.

The Rt. Hon'ble the GOVERNOR OF CEYLON, &c., &c., &c.

Dear Sir,—I beg to return Your Excellency my most sincere thanks for the flattering testimonial you have been pleased to furnish me with. In reference to Your Excellency's wish for my further ideas on Coffee planting, I have the honor to annex a memorandum, and which I trust will be found useful. With regard to the vines at Queen's House, I very much fear they are too large for removal to such a distance as Kurunagalle, particularly at this exceedingly dry season, and as *cuttings* root so easily, I should unhesitatingly advise some to be sent in preference to the old vines, the result I feel confident would be quite as satisfactory. The Mohandiram is also very unwell, so much so, that he cannot come into the Fort to see me, which circumstance I am most sorry to say forms an obstacle to the furtherance of the work Your Excellency was anxious I should attend to. I have however seen Mr. Venom with whom I hope to make such arrangements as will favour its completion under other guidance: Since my time in Colombo is now so very short, cuttings of all the vines I will not neglect. I have to offer my grateful acknowledgments for the kind enquiries Your Excellency makes for my health, and am rejoiced to say the change to Colombo had greatly benefitted me. I must now conclude by requesting that Your Excellency will condescend to believe my prayers will be constantly offered for uninterupted *health* and *happiness* to your excellent self and family. With most dutiful respect, I have the honor to be, Dear Sir, Your Excellency's most obedient and faithful servant,

J. G. LEAR.

MEMORANDUM.

Coffee plants 9 or 10 months old are preferable to any others for plantation; they will be then about 10 inches or 1 foot high; it is not material that they should have begun to branch out, if the plants are stocky and healthy; I should nevertheless rather they had one pair of lateral branches. Distance in rows ought to be determined with a

due regard to the nature of the soil and locality. On very fine soil, and in sheltered situations distance in rows 6 feet apart and rows from each other, 7 feet is in my opinion not too much—in poor soils and exposed situations 57* square is about the medium, the former I would top at 6 feet high, the latter at 4 ft. 6 in. high; when this operation is performed it should not be when the top may be pinched off with the thumb and finger, but when it has grown 6 or 8 inches higher than the height intended, thus a plant throws a little of its luxuriance in a natural way, and in the other system a bundle of suckers is the inevitable consequence. J. G. LEAR.

* ? 5' 7" square.—ED. *L. R.*

REPORT ON THE ROYAL BOTANIC GARDEN, PERADENIYA, NEAR KANDY.

(*By the late Dr. W. C. Ondaatje, Acting Botanical Superintendent, 1st June 1843.*)

Uses of Botanic Gardens.—In submitting my first Report on the Royal Botanic Garden to His Excellency the Governor, I beg very respectfully to avail myself of the opportunity to direct public attention to the great importance and utility of such an institution, both in a scientific as well as in a practical point of view. It is much to be regretted that so few seem to be alive to the benefits which may be derived to a country by the establishment of a Botanic Garden, which, while it assists men of talent and research in their studies of Natural Science, affords at the same time the best means of ascertaining the richness and variety of the vegetable productions, with which an all-bountiful Providence has adorned each land.

The excellent and learned Doctor William Carey in his introduction to the "Hortus Bengalensis" thus forcibly observes on the uses of Botanic Gardens: "By the formation of Botanic Gardens the labors of scientific men have been called forth and greatly aided, as these afford facilities for the improvement of Botanical Science, which might have been sought for in vain without the aid of such institutions. But the Botanic Gardens and other noble collections of plants in Europe could never have been brought to the perfection in which they now appear, had not public or private repositories of plants been formed in the different settlements in Asia, Africa and America;" and further that the great object of an institution of this kind is, "the propagating of useful plants, natives of other countries, and the consequent enriching of the country into which they are introduced."

These observations of Doctor Carey, a Botanist of no small eminence, and who was himself of the Utilitarian School of Philosophy, appear to be sound, rational and conclusive.

But if such be the advantages of cultivating Botanical Science in a general point of view, of what greater importance must the study of that Science be in this fine country, where plants, the most beautiful, singular and useful are found spread over its whole extent, and where every effort to become acquainted with its economical productions, will most certainly be attended with no small profit.

I shall now proceed to the various points which I am anxious to submit to His Excellency's consideration, noticing them in the following order:—

Subject of the Report.— 1. The condition in which I have found the Garden.

2. A brief notice of some of the most useful plants at present growing in it.

3. The improvements I have been effecting.

4. A few suggestions for the advancement of the Garden.

1. *Condition of the Garden.*—It is with extreme reluctance that I enter on this point of my report as it may perhaps be considered that I take occasion to reflect on the labors of my predecessors. I beg therefore that it may be distinctly understood that I have not the remotest wish of detracting aught from the merit of their services; but a sense of duty to the Government and my own anxiety for the advancement and success of the Garden, render it obligatory on me briefly to advert to the condition in which I have found it.

When I took charge of the Garden which was in February last, nearly a month after the death of Mr. Normansell,* I feel bound to state, that it presented to me no very encouraging aspect; nor was it by any means in the condition in which I expected to find it. Little attention appeared to have been given to conduct it scientifically and with a reference to public good; or to preserve it in order and extend its cultivation. Several portions of land, surrounding the small extent of cultivated ground, are covered with thick jungle, and such even as were in a state of cultivation, as far back as the days of the indefatigable Moon and some of his immediate successors, from having been sadly neglected, are now overgrown with weeds, &c.

This useless exuberant vegetation occupies various conspicuous parts of the Garden, and I need hardly observe, that it greatly impedes the improvements which I propose effecting, independently of its being productive of no small injury to the cultivated parts themselves.

On examining these jungles, I find traces of exotic plants, roads, &c. which are evident indications of their having been at one time properly cultivated. Several roads and walks in the Garden have also been totally obliterated from various causes.

It affords me however much pleasure to be able to notice, that Mr. Normansell made a commencement of labelling all the plants he cultivated and began setting apart portions of ground for the purpose of planting them according to the "Natural Order," and I cannot also in justice omit to remark that the Garden is indebted to Mr. Lear (one of its former Superintendents) for many of the beautiful arrangements and orderly disposition of plants, flower beds, &c. now found in it.

2. *A brief notice of a few of the most useful plants in the Botanic Garden.*—One of the chief objects of a Botanical Garden being the introduction and cultivation of rare and useful plants, it may perhaps be desirable that I notice a few† of such as are at present growing in the Garden.

Sisso Seedlings sent to the Garden, by the Hon'ble P. Anstruther, Esq.—I have much satisfaction in being able to report on the success which has attended the introduction of the Sisso (Dalbergia Sisso, Roxb.) The seedlings of this most useful timber tree were chiefly obtained through the instrumentality of the Hon'ble P. Anstruther, Esq., and it will no doubt be gratifying to that gentleman to know the fact, as he has always felt an interest in the progress of the Botany of this Island.

From the vigorous growth of the plants (of which there are 160 in the Garden) it may be fairly anticipated that much benefit will be derived of the Colony, as they become generally introduced ‡

(*To be continued.*)

* To whose memory we believe we do no injustice in saying that during his short career in Ceylon he devoted much more attention to earning money by reporting on coffee land, than to the Botanical Gardens. —ED. *L. R.*

† For more plants, vide Appendix A.

‡ *Teak and Mahogany* thrive luxuriantly in the Garden, *Mesua ferra* (Iron wood) and *Dodonœa viscosa* (Switch Sorrel) yield wood which is *close grained*, and I think may be used *for wood cuts.* They are natives of Caltura, but are also found in the Central Province

THE CULTIVATION OF ALOE FIBRE IN MEXICO.

At the end of an article on Aloe Fibre cultivation in the *Bulletin Du Musee Commercial* which gives very much the information embodied in our pamphlet, we find an estimate appended of which we furnish a translation. We have adapted the figures as nearly as possible to local conditions so as to inform and encourage any Ceylon cultivators who are interested in the subject:—

COST FOR A PLANTATION OF ALOES OF 10,000 MECATES EQUAL TO ABOUT 120 ACRES.

	Piastres.*	equal to R
Value of 10,000 suckers	2,000	4,400
Enclosures with dry stones (fencing)	420	924
Clearing	375	825
Planting ...	250	550
During the 4 years of upkeep	1,250	2,750
Interest on the money engaged during 4 years ...	1,461	3,214
Total	5,756	12,663
Cost of working during 6 years.		
Steam engine, 3 horse-power	1,090	2,398
Machines for scraping ...	450	990
Shed for the machine ...	500	1,100
Cutting and transport of 24 million leaves ...	12,000	26,400
Salaries: (1 machinist at 1 piastre per diem, 8 labourers at 0·50 piastres) per diem ...	9,000	19,800
Wood, oil, repairs of machinery for 6 years ...	2,400	5,280
Diminished value of machines after 6 years' wear	924	2,033
Interest on the capital engaged in manufacture ...	1,468	3,230
Total	27,832	61,231
Cost of planting	5,756	12,663
Total	33,588	73,894
Produce:		
1,200,000 lb. of fibre at 15 centavos — per lb. (price in January 1889)	180,000	396,000
Net product	146,412	322,106

* 1 piastre equal to R2·20

There is surely enough encouragement here for either planters or merchants to make an attempt at business with Ceylon Aloes.

TO KILL CROWS.

TO THE EDITOR OF THE "AUSTRALASIAN."

Sir,—I have noticed several inquiries for methods for killing crows, and I find the following very effective. After skinning a carcass, thoroughly score all the fleshly parts (so that they will come away freely in small pieces), and well rub in fine strychnine; also poison all blood that is lying about, or if there is no blood, cut up the liver into small cubes (small enough for a crow to swallow), and place a little poison into the centre of each cube. Where there are no carcasses to be poisoned the following would be a good way; collect all blood when killing a sheep or bullock, and mix it with dissolved strychnine and then lay it down in favourable places; crows generally fly to trees when they feel the effects of the poison.—Yours, &c.

WILLIAM J. AUSTIN.

Mount Mercer, April 17.

—*Australasian.*

[There is just the danger that domestic animals or children might be poisoned.—ED. *T. A.*]

PADDY CULTIVATION.

A Galle correspondent writes:—"We are glad to find that Mr. William Jansz's frequent agitation in the matter of improved paddy cultivation has now been without its beneficial results, if the recommendation of the Select Committee are to be carried out. Mr. Jansz's scheme to afford relief to the native agriculturist was submitted to the Government Agent, Mr. P. A. Templer in the first instance who brought the matter to the notice of Government. The Committee in recommending that seed paddy be advanced more systematically and on a larger scale than heretofore to cultivators in poor circumstances has adopted Mr. Jansz's suggestion. The importation of good kinds of seed is another recommendation which was practically carried out by Mr. Jansz who obtained seed paddy from Batticaloa for cultivation in Galle."

REPORTS OF TEA COMPANIES.

By last mail you will have received from me the report of the Eastern Produce and Estates Company which was presented to the shareholders at the General Meeting held on Thursday. With this is forwarded to you the report of what passed at that meeting appearing in the *Money Market Review*. There is not much in this report to which your attention may specially be called, nor need anything be added as to progress made by the Company to the remarks with reference to it given in my letter of last week. The Chairman's reference to a possibly bright future for the coffee remaining in Ceylon had unfortunately to be qualified with a very important and significant "if." "*If*" he said, "they could find out how to get rid of the green bug, he thought they would all consider that there was a new future for the remaining coffee in Ceylon."

A further document connected with Ceylon Companies forwarded to you with this is the Report of the Ceylon Tea Plantations Company. It had been hoped by me that it would have been possible for me to have sent you this by the last mail, but it did not reach my hands till after that had left. It was presented to the shareholders at the third Annual General Meeting last Tuesday. The Report does not contain much in addition to the items of it commented on by me when writing by the last mail. It may be noticed, however, that the average price realised for the Company's tea had been 11d per lb. during 1889 as compared with 10½d during 1888. Evidently the Company does a large business beyond dealing with the produce of its own estates. These yielded only 937,407 lb.; while the amount cured by the Company, including its own produce, purchased tea, and for other proprietors, totalled 2,014,335 lb. The acreage of the properties is 5,446 acres, of which 2,673 are of tea in bearing and 993 of tea not yet yielding leaf. Very recently you were told by me of the intention of this Company to purchase more estates, and of the contemplated increase of the capital to £300,000 to effect this. From the report it appears that, on the 25th of March of this year, there were added to the properties owned by the Association the following estates: viz., East Holyrood, Waverley, Tangakelly, Cymru, Cameron's Land, Lochiel and Rosita; the acreage of these amounting to 2,314 acres. It is stated that Mr. H. K. Rutherford, the late manager in Ceylon, has been appointed Managing Director in London, and that Mr. G. A. Talbot has been appointed to succeed him in Ceylon. We have only seen a brief report of last Tuesday's meeting, but from it we gather that the proposals of the directors received unanimous adoption.—*London Cor.*

TEA SALES IN COLOMBO AND LONDON.

Surely "One Who Wants to Buy" must know as well as you and I do that considerably moro than 2d is put down as the difference between London value and the Colombo equivalent. If he does not, this qnotation from a valuation before me will teach him :

London Value	Colombo equivalent at 1/6½ exchange, Freight at £2.
1/4	72 cts.

At this rate of exchange 5½ cts. to the penny will not be very far out, and this means a difference of nearly 16 cts., which allows for a tolerably good margin of draft and loss in weight expenses even after the 2d charge has been taken account of. Finally, I did not *choose* an account sale because it was an unusual one. I quoted from it in the first instance becauso it was the last one to hand, and when my statements were challenged I naturally stuck to that particular accouut for subsequent corroboration. I eliminated draft and loss in every case; so, as I said before, it was as fair for one as for another. I allowed for no drawing charges becauso I don't pay them; and, if I did, as "One Who Wants to Buy" suggests, and charged for drawing myself, I should deserve, and probably obtain, the "sack." Shipping charges are, I repeat, about balanced by brokerage iu Colombo.—C. T. G. in local 'Times."

The rise in the value of silver and in exchange is not pleasant for our planters who are all the readier to see their teas go to outsido countries. To this end the local market, since our appeal, is being better supported, the offerings last week and this again being over 200,000 lb. The discussion continues over tea prices realized from sales locally and in London. Mr. Gordon Frazer writing to a contemporary contributes the following :—

C. T. G. writes that he does not consider loss in weight aud draft, either in his own case or in calculating charges ou Colombo bought teas. In this he is manifestly wrong, as a buyer *must* take it into consideration. For instance, in the case of the account sale he quotes from, had this tea been sold in Colombo the buyer would have had to pay for every pound invoiced, even includiug the samples taken out of the packages for the purpose of selling the tea here; yet, according to London custom, he receives payment for 1 lb. less than the actual weight in each package. The draft allowance must therefore be taken into account in calcnlating the cost of laying tea down in London. * * * The loss of 1 lb. per package from either the gross being just insufficient to turn the scale at home, or the tare being just over a certain number of pounds, frequently does happen. Taken all round, my opinion is that London charges ou a ten-peuny to a shilling tea in chests work out at as low a calculation as is ever safe to work upon, at about 1½d per lb., half chests costing rather more; and this may be taken as about a basis from which to work, the cost of laying down in London rising or falling as the valuo of the tea is higher or lower. Of course, when freights are abnormally high, as sometimes happens this also must be allowed for.

"One who wants to buy" adds :—

It will be seen that "C. T. G." admits, as I surmized was the caso, that no allowance had been made by him for draft or loss in weight. But is that fair! I therefore really cannot see why "C. T. G." should object to the amount put dowu by buyers here as the cost of shipping and laying down teas in London. By eliminating draft, loss in weight, drawing charges, commission, and shipping charges, he of course reduces the cost, but how many can dispense with these chargos! I know lots of instancos whoro 1 ct. per lb. is charged for shipping and in estimating 2d I have very often been under the mark.

Just come back from a mill where I have turned out and weighod 4 chests purchased at last public sale, markod 75 lb. nett. Result=72 lb., 73 lb., 75.4 lb., 70.14 lb., total loss 8.14, equivalent to a loss of 3 per cent! And "A Direct Importer" writes :—

"One Who Wants to Buy" in his statistics of 10th May seems to pay higher charges than is necessary. My loss in weight and draft is nevor as high as 3 per cent. and rarely as high as 2 per cent. I do not pay ⅜ cent for shipping charges and export duty, neither do I pay more than 1½ por cent. commission, nor do I pay a commission for drawing. My total shipping and London charges on one of my recent breaks of 8670 lb. allowing 60 *cents* per pound for loss in weight, and draft 122 lb. came to just 1½d. I take it that if tho ordinary common or garden planter can place his teas in London, for that sum, "One Who Wants to Buy" should be able to do it for less. Has he ever heard of such things as "return commissions?"

PEARL AND CHANK FISHERIES.

The energetic Superintendent of the Madras Museum has issued a brochure of varied contents, combining a brightly written accouut of his recent visits to the pearl fisheries of Tuticorin and Ceylon with a more strictly scientific description of the marine fauna of the Gulf of Manaar. To these subjects he has added a geueral survey of Ramesvaram Island, its fauna, flora and geology, a brief note on the two pearl-producing mollusca of the Presidency other than the pearl oyster, and an account of the chank-fishery at Tuticorin. It may perhaps be suggested that the effect of these pieces is somewhat marred by their publication together and by the arrangement adopted. The reader's attentiou and interest is distracted by the transition from the Madras pearl fishery to the history of the chauk industry and from that back again to tho pearl enterprise of Ceylon. The pamphlet, as a whole, seems to lack a sufficient *raison d'être*, though the articles, considered separately, fully justify their existence. This, however, is a result attributable mainly to the absence, in Madras, of any Society devoted to Natural History whose Journal would have supplied a more appropriate medium of publication. Failing this vehicle, Mr. Thurston had been obliged to send forth his notes in their preseut form, and all who have read his previous writings will not be surprised to find that the result is an admixture of very readable narrative with valnable scientific record. The work is illustrated by several photographs, plans and woodcuts, and the printiug of the numerous scientific names seems to be creditably free from inaccuracies. The Tuticorin pearl-fishery, to an accouut of which the first paper is devoted, commenced on the 25th February 1889 and, as is well-known, proved a comparative failure. Want of boats and divers and the existence of the oysters in deep water and at a great distance from the shore were the chief causes of this result, the men natnrally preferring to take their labour to the rival Ceylon fishery, where the oyster bank was in only half the depth of water and was situated five miles from shore instead of ten. On leaving Tuticorin Mr. Thurston proceeded to visit this Ceylon fishery, which was carried on at a locality known as Dutch Bay, but the day after he arrived the camp was broken up, owing to the outbreak of cholera. Later in the year 1889 he accompanied Captain Donnan, the Inspector of Ceylon Pearl Banks, on his annual cruise of inspection, aud gives an interesting accouut of his experiences. The condition of the banks is ascertained by means of divers, and in order to ensuro a thorough examination the same plan is adopted as is followed by searchers for lapswings' eggs in England, viz., the divers work in a circle from a fixed centre, the distances being marked out by buoys. The oysters brought up are washed and valued by experts. After the inspection of the Muttuwartu bank it was estimated that there wero 30 million oysters, worth five lakhs of rupees in revenue within an area of about 31 square miles. These oysters were of not less than five years growth, which was shown by the readiness with which they came away from the rock and were, therefore, ready to be fished; indeed, it would be little use valuiug younger oysters, for so many aro the foes to which they are exposed that the most promising banks

often completely disappear. On the various moot points connected with the history of the pearl oyster Mr. Thurston is able to give some valuable information. Referring to the theory which attributes the occurrence of pearls to the presence of parasitic worms in the oyster, he states that out of many hundred oysters which he examined in a few only were these worms present. He mentions that the attempts made in Ceylon to artificially cultivate the pearl-oyster have failed, but as to the causes which produced this result or which so frequently prevent the young oyster from attaining maturity, he has no certain conclusion to offer. "The life of the pearl-oyster," he observes, "must be a struggle not only during the time at which it leads a wandering existence on the surface and is at the mercy of pelagic organisms, but even after it has settled down on the bottom, where it is liable to be eaten up by fishes, holothurians, molluscs etc., or washed away from its moorings by currents; and comparatively few out of a large fall of 'spat' on a bank can reach maturity even under the most favourable conditions. Not, in fact, till a bank is thickly covered with oysters two years' old can any hope be held out that it will eventually yield a fishery."

The paper of most scientific importance included in Mr. Thurston's brochure is undoubtedly that entitled "Fauna of the Gulf of Manaar." The region thus designated is the gulf, or bay dividing the extreme south of the Indian Peninsular from Ceylon and continued eastward, after passing Adam's Bridge, by Palk Strait. Lists are given of the sponges, corals, echinoderms, crustacea, molluscs, etc., collected by Mr. Thurston, and among them is enumerated a considerable number hitherto unknown to science. As might be expected the fauna greatly resembles that of the neighbouring island of Ceylon, but in a large number of cases species which had previously been recorded from widely different regions were discovered, and their geographical range thus greatly extended. It does not appear that Mr. Thurston has been lucky enough to make any "find" of economic interest. None, he says, of the 31 sponges collected in the Gulf of Manaar are of any commercial value, and though he picked up several fragments of the red coral of commerce on the Pamban beach he seems to doubt whether they were not accidental occurrences. Among the stony corals collected he mentions one (Heteropsammia cochlea) in which a certain worm is always found living; the advantage which either animal derives from this association is unknown, but, as Mr. Thurston observes, some must exist, for a coral is never found without a goorm. A similar parasite occurred in one of the Gorwinae, the stems of which were marked by diseased excrescences, or galls, inhabited by a Cirrhiped crustacean. These excrescences were perforated by an orifice, through which currents of water necessary for the respiration of the crustacean were admitted, the stream passing constantly in the same direction. Among the fishes the most characteristic feature of the fauna was the prevalence of the so-called coral fishes, being for the most part brightly coloured species which live over the coral reefs and feed either on the small delicate marine invertebrates which swarm on the living corals, or, if their teeth are adapted for the purpose, on the soft parts of molluscs, which they extract by gnawing or boring holes in the shell.

We have not space to follow Mr. Thurston's interesting description of the wealth of animal life to be found in the waves of these tropical waters, the Medusae sometimes present in such numbers that the net became instantly filled with a thick jelly, the crustaceans rendering the surface of the water milky, the extensive banks of Alcyonians "of the luxuriant growth and size of which only a very feeble idea is obtained from specimens in Museums." Nor can we refer in detail to the very full account of Ramesvaram Island which is contained in another article. The paper on the chank fishery of Tuticorin tells us that about 200,000 of these shells, realising some R16,000 are unusually fished near the port of Tuticorin. The shells are sold by auctions and are used for various purposes, such as offering libations and as musical instruments in temples, as armlets, bracelets, and other ornaments. A right-handed chank, *i.e.* one which has its spiral opening to the right, is much prized. Such a shell is said to have sometimes fetched a lakh of rupees, and in sober fact one is stated to have been sold in 1887 for R700. Dr. Thurston's note on the pearls derived from the Mytilus and Placuna does not suggest the probability of the trade in these molluscs ever rivalling the fisheries of the Indian pearl oyster—(Avicula fucata,) but it gives some curious information on the present condition of the industry. Indeed, the whole of the pamphlet is full of interesting matter, and it can be recommended to all who want to know something of South Indian pearlfishing, or of the marine fauna of the Presidency.—*M. Mail*, May 2nd.

THE CINNAMON INDUSTRY.

Kadirana, May 21st.

The rise in the price in the cinnamon at the London sales of the 19th instant, as telegraphed by Reuter, though only ½d to 1d per lb and that on the lower sorts, is so far good news, and points I hope to a further rise at the August sales; for by then the effects of the partial stoppage of the exportation of chips should begin to be fell. Cutting for the new season has commenced on most estates; and now perhaps will arise the temptation to some—I hope there are none, who consented not to scrape chips,—to try and evade the agreement. As a rule two-thirds to three-fourths of the crop for the year is secured during the Maha Mosama, that is between May and November, and the pruning and preparation of chips finished by the end of December. Very little pruning is done before August, so that but a small quantity of chips of the new season will be exported before then. If therefore between August and next February there is a marked diminution in the quantity exported, as compared with the same months last year, it will be a proof that the agreement is being honourably carried out; if on the other hand there is no very sensible difference it will be as strong a proof the other way. I still believe that with very few exceptions those who signed the agreement intend faithfully to abide by it.

The rainfall in this district up to this morning is only 1·42 on seven days. All this has been from the north east, but this evening a heavy squall came from the south; and for the first time this year I notice the clouds scudding from the west. There are ominous mutterings and growlings in the direction of the hills, so I suppose there will be a battle soon and the south-west enter on possession for six months. It seems a strange time for trees to blossoms, but I notice many forest trees in bloom, and some in young foliage; conspicuous amongst those in bloom is the "milla" which is quite a pretty sight. The cinnamon bushes are out in "bud" which may interfere with peeling a little later on. 22nd 0·58 of rain last evening.

PAPER-LINING FOR TEA-BOXES.

Some time ago we gave a good deal of information about a specially prepared paper to supersede tea-lead for chests—being of course much lighter and cheaper. This was brought under our notice by Mr. Maitland-Kirwan who in fact, first introduced the paper into the East. Before he left this gentleman sent us a full chest of tea packed in his paper to send home to our agents, in order to test the suitableness of the new packing. This mail brings us the London report on the same. Mr. John Haddon who, of course, knows nothing

of Mr. Maitland-Kirwan or the object he has in view, writes :—

"The *tea* appeared to arrive in perfect condition. I have put up the oiled paper in a parcel to be returned to you that you may see how little discoloured it is. We could not guarantee any information on the condition of the tea in any corner or side of the case, as it was probably turned out at the Customs to get the *tare*. Anyhow the tea was perfectly dry and seemed uniformly in good condition."

This is as satisfactory as could be desired: the tea was a pekoe-souchong from Elkaduwa. Mr. Maitland-Kirwan should now make known the prices, &c.

FIRE EXTINGUISHER.

(*Taken from "Chambers's Journal," March 1st*, 1887.)

20 lb common salt, 10 lb. crude salamoniac; mix in 7 gallons water; fill into bottles and cork and hang up in a convenient place. In case of a fire smash the bottles over the fire when it will put it out at once. Strong salt and water will answer if salamoniac cannot be got.—Please put this in for the information of others.—*Cor.*

THE CONSUMPTION OF PEPPER.

It is an unmistakable fact that the demand for White Pepper, more particularly when ground, is rapidly increasing in this country, for the Ground Black Pepper caster is, unfortunately, now rarely or ever to be seen on the table in private households, hotels, or restaurants. Indeed, Ground Black Pepper is little used—otherwise than occasionally in cooking, and the chief demand for it is for manufacturing purposes. Possibly the discontinuance of the use of Ground Black Pepper may, to some extent, be due to the better colour and appearance of White. But to a large degree, the falling-off in the demand for Black Pepper has undoubtedly been caused by the miserably common, husky, and inferior qualities of it offered to the public. These inferior sorts are sold wholesale at extremely low prices, frequently even at much less than whole Black Pepper can be bought at in the open market. The poor quality and wretched appearance of such parcels have, no doubt, caused the consumer to almost discontinue the use of Black Pepper as a condiment. That this should be the case is very much to be regretted, for the pungency and flavour of the finest qualities of the entire, or Black, Pepper Corn, when ground, are much preferable to the lower qualities of White Pepper, with which the better qualities of Black would have to compete, owing to the present small marginal difference in price. In fact, good Black Pepper is not only lower in price than White, but it is undoubtedly a better commodity as a Spice.—*Produce Markets Review.*

CEYLON TEA IN AMERICA.

We have been favoured with the following information respecting the progress of the business of the Ceylon American Tea Company, Limited, by the local agents of the Company :—

(*Extracts from letters from Mr. R. E. Pineo, New York.*)

March 1st, 1890.

Our store was opened for business on the 11th ultimo, but our advertising matter was not ready until the 15th, when a portion of it was mailed to residents of this city. The fittings of the store and the two natives attract considerable attention, and many ladies come in to satisfy their curiosity who before their departure, generally buy some tea. We have arrangements perfected for giving all a cup of tea, and ladies can sit down and drink it and have a chat with us at their ease. The chairs and tables are made of natural bamboo, the walls are covered with draperies and photographs, while on the floor there are skins, rugs etc., with areca and other palms and ferns placed about. The partition in the rear, dividing the room represents the front of a Bungalow in front of which are four Electric Lights of sixteen candle power each. The fitting up is unique and original and the general finish is much admired. The store when lighted presents a pretty picture. Ladies invaraiably ask for our best tea and many will take no other. The question as to price does not appear uppermost in their minds and two dollars would be as readily given as a dollar and a quarter. The first week's sales were in proportion, as follows :—

			per cent.	
Orange Pekoe	at $ 1·25	"Bud"	66 2-3rd	=100
Pekoe	at $ ·90	"Tiffin"	20 5-6th	
Pekoe Sou.	at $ ·65	"Bungalow"	12½	

"The Indian Association of London is opening a store on 23rd Street and its price for Orange Pekoe is $1·25 per lb. Mr. Davidson sells his 'Sirocco' tea up to a dollar a pound. I am of opinion that the ladies in the city will use our best tea and that our other grades will be sought for by people in the country. At this early stage it is not easy to judge what meed of success awaits our efforts, but it is generally acknowledged that we are moving in a direction that ought to give the best results."

"It is unfortunate that we do not, in view of your limited capital, see clearly how my visit to the Pacific Coast can, as it ought to be, be followed by action on the part of the Company. Several firms and individuals at different points, desire to become the Company's Agents, but they all want certain guarantees, consignements etc, or demand salaries. We think you may cease for a time sending pekoe souchongs, when more is needed a cablegram can be despatched to that effect. So far we have felt it advisable to postpone entering into contract for advertising and beyond our sending out 'personal' 'tea secrets' and 'you may as well begin right', our only contract is with the *Century* a copy of which paper goes forward to you by this mail. This notice appearing in the *Century* would usually cost $350 but our rate is $187.50 per month and we go in for two months certain, If we find it pay we may continue to advertise in the *Century* not otherwise."

(*Extract from New York letter dated April 4th.*)

SAMPLES.—About 100 lb. of pekoe tea has been sent out in response to nearly one thousand applications. In addition to cost of tea two cents postage on each packet was paid.

TEA SECRETS.—The number of these little booklets sent out up to the present is about 6,000.

SALES.—Up to 1st instant we sold, to about one hundred and ninety people, two hundred and thirty three packages of tea, and we believe nearly all liked it and we hope that all will prove steady customers. We have also made sales in original packages and we are striving to attract the trade to our goods, but, for some time to come, or until the consumer demands it of his grocers, we cannot look for much support from the trade.

DRUGGIST HOUSES.—One of the largest wholesale Druggist Houses in this country is considering whether or not it will handle, on a scale commensurate with the magnitude of its business, our packet teas, but a decision is not likely to be reached for some weeks to come.

MR. STANTON OF THE FIRM OF—Messrs. Gow, Wilson & Stanton. This gentleman paid our place of business two visits, tasted our teas, and manifested considerable interst in the undertaking. He appeared pleased with the general arrangement of our store, and believes we were directing our effort rightly. He also saw Mr. Farr.

(*Extracts from letters &c. from Messrs. Wattson & Farr, New York.*)

April 11th, 1890.

We have not yet made any effort to place shares as we have been waiting for the prospectuses and articles of association, copies of which have been received this morning, we also thought it best to get the shop well under way before doing anything

Mr. Pineo keeps a separate account of all cash receipts, and sends us weekly statement. The books of the company are written up daily and are well kept by him. The demand for the tea is showing decided signs of increase, and we hope before the year is out, to have a good paying trade established in the shop. While the sales are still comparatively small there is every reason to be encouraged by the increasing interest which is being taken. All shipments of tea up to that per "Glenorchy" have been received in good order, and delivered to Mr. Pineo.

Messrs. Wattson & Farr telegraphed on May 6th that there is a fair chance of selling a large block of shares, and they asked for the firm offer of 3,500 till the end of the year. To this an answer was sent in the affirmative, and it is hoped that it will result in a large accession of shareholders and capital.

The Company's pretty "booklets for the American people" to which we referred the other day are most daintily got up: here are the contents of one of them:—

"TEA SECRETS."

American coffee is probably better than coffee anywhere else in the world *on the average*.

Tea is worse, for two reasons: first, your tea is not tea; and, second, you make it wrong.

The two secrets are: the tea itself, and how to steep it.

There is a third: good tea is in no way difficult in the brewing or uncertain in the result—you can always be sure of it—nor extravagant.

It is also easy—you can depend on it. All you have to do is to get the right tea and make it right and here is all the information you need for both.

Your money can go as far in $1·25 tea as in 50-cent tea; that is, good tea can be cheap.

THE TEA.

Good Tea does not come from China or Japan; the good teas of those countries do not come here.

Good tea is grown in Ceylon by British planters. The strongest comes from India. India mixed with Ceylon is finer than India. Ceylon alone has the finest flavor.

India and Ceylon excel China and Japan so much that they have driven half those teas from the English market.

One pound of Ceylon or India goes as far as two or three of Japan or China; and every pound of British tea displaces two or three of the native products.

The American tea-trade favors Japan and China because its connections are there.

The tea industry in India is modern; in Ceylon it is new. But the adaptation of soil and climate to tea is so good in Ceylon that that island, half as large as the State of New York, already grows nearly half enough to supply the United States.

But, so long as the American people will drink Japan and China teas, so long will those teas come; for the trade is profitable.

Ceylon is the tea then.

THE MAKING.

Make it at table. (The American notion is that making tea at table is an English notion. It isn't a notion; but that is another subject.)

Heat the pot.

Pour boiling water into the pot already hot: fresh boiling water, water that has just come to the boiling point and has not been boiling so long as a minute; pour in as much as you want.

Immediately put the tea in on top of the water and, in from two to seven minutes, pour into the cups or into another pot. Don't let it stand on the leaves much longer than seven minutes.

Use half or a third as much tea as you are accustomed to using of China or Japan tea.

Now that is exactly right. If it is worth you while to have perfect tea, that is the way to make it. There is no other.

If you are satisfied with tea a little short of perfection, steep it as usual.

We are introducing the perfect tea of Ceylon.

We are the tea-planters themselves. We are interested in your knowing how to infuse our tea to get the perfect result.

The tea-planters of Ceylon are about four-thousand. Every one of them belongs to a local Association affiliated with a central Association. They have formed this Company (undersigned) to trade with the American people.

We have the duty of getting your taste upon our tea. The way to do it is to tell you how to prepare it for the table.

THE CEYLON PLANTERS' AMERICAN TEA COMPANY, LIMITED.

No. 4 East 22nd Street, next Broadway.

Finally, the following is an extract from the advertisement in *The Century* and a form of order adopted:—

(*Extracts from Advertisements and Circular.*)

Our tea will be a revelation to you. You will say you never tasted tea before. It costs 65 and 90 cents and $1·25 a pound; but, you use so little of it, you save a good share of your tea-money—in many a family all the coffee-money.

One of the reasons why Americans drink so much coffee is that your tea is abominable. You get China and Japan teas and steep them to death. Your teas are not good; they are not so bad as they seem; you spoil them with steeping.

We bring you better tea and tell you how to steep it—a primer full of tea-knowledge.

Please send to Mrs.

No.

lb.	Bud Brand Tea	at	$1.25
lb.	Tiffin "	"	·90
lb.	Bungaloe "	"	·65
Sample,		"	
lb.	Ceylon Coffee	"	·50

HORSE-POWER.

With the universal use of the steam engine the term horse-power has come to be very largely used, but, although its employment is so frequent and general, very many people are in doubt or ignorance of what the expression really means. Everyone knows that an engine requires a certain power or force to work it, differing, however, according to the nature of the engine. In order to measure this power it is necessary to adopt a certain standard. This standard goes by the name of horse-power. One horse-power is equal to 75 seconds-killogramme-metre, that is to say, that in 75 seconds a weight of 1 kilo. can be lifted 1 metre high, or inversely, in 1 second 1 kilo. can be lifted 75 metres high. Take, for example, an engine, whether impelled by steam, gas, or compressed air, of 6 h.-p., according to the above rule such an engine must possess a power to raise in 1 second 6 × 75 kilos.=450 kilos. exactly 1 metre high, or, to put it in another form, a working machine which requires 6 h.-p. to keep it running must be worked by a falling weight of 6 × 75 kilos.= 450 kilos., which in 1 second will have fallen exactly 1 metre. If the falling distance per second be greater than 1 metre the weight must be smaller; the motor raises in 1 second 75 kilos. 6 metres high, or 6 kilos. 75 metres or 25 kilos. 18 metres high, or, putting it in the other form, the working machine is driven by a falling weight which in 1 second falls 6 metres and weighs 75 kilos., or falls 18 metres with a weight of 1 kilo. The whole of these performances would represent 6 horse-power. The power of a man is reckoned at 13-18 kilogramme-metre, according to the work required. In turning a wheel round six men are considered as equalling 1 h.-p. From this it will be perceived how advantageous is the employment of mechanical power, even when but a moderate force is required.—*Indiarubber and Electrical Trades Journal.*

COFFEE PROSPECTS.

Mr. Anton Hvistendahl in his review dated on February 19th thus summarizes the position of coffee: "Although I have every reason to believe that my estimate of the Brazil crop, 1889-90, will not be realized, I do not see that any good purpose will be served by reducing it. Assumiug that 4,500,000 bags be marketed from Brazil during the present season, we have to face, for tho year 1890, a minimum deficiency of 1,000,000 bags from Brazil, and 250,000 bags from other countries as compared with 1889. When the prospects of the next Java crop, which is reported to yield only one-third of tbe quantity harvested last year, or, say a deficiency of fully 500,000 bags are taken into consideration, the outlook as regards supply is gloomy indeed... After a very carcful examination of all the circumstances bearing on the case, I have come to the conclusion that an advance of at least 10 per cent in coffee is not only necessary but imminent, and that such advance only will be maintained, but carried further, provided there hereafter should be good reason to assume that the present Brazil crop will not exceed 4,000,000 to 4,250,000 bags.—*Rio News.*

EASTERN PRODUCE AND ESTATES COMPANY, LIMITED.

COFFEE—CACAO—TEA.

(From the *Money Market Review*, May 3rd.)

The third ordinary general meeting of this company was held at the offices; 27, Clement's Lane, on Thursday; Mr. C. J. Lindsay Nicholson prosiding.

The SECRETARY (Mr. Douglas R. Smith) read the notice convening the meeting and the report was taken as read.

The CHAIRMAN said: Gentlemen, in rising to propose the confirmation of the report of the second year's working of the Eastern Produce and Estates Company, the directors hope you will agree with them that the results show a marked improvment upon last year. The directors have been anxions at times throughout the year as to the resnlts, but they are very glad that in the report now before yon they are able to show that the profit for the year has amounted to £18,513 against something like £12,000 last year, and that after providing £11,749 for the payment of the interest on debentures and the preference share dividend there is a balance of £6,764 1s 10d to be carried to reserve fund in torms of the articles of association, so that the reserve fund will now amount to £7,199 15s 8d. The results have been improved by some of the produce doing better than we expected. The prices of tea, as you are all aware have beeu slightly lower in 1889 than they were in 1888, but as we point out to you, our coffee, which we really had despaired of doing very much iu quantity, has during the past year resulted so well that it has, as we state in the report, been a material assistance to the year's profits. If you kindly turn to the balance-sheet now, I will briefly allude to the alterations, such as there aro. On the debit side you will find tbat tho estates reserve account, realisations and rocoveries, amount to £5,050. That is a small increaso, caused by tho roalisation of certain machinery. The other items on that side I do not think call for any comment. On the credit side you have the amount representing landed and other property acquired at January 1st, 1888, under the agreement sanctioued by the Court of Chancery, dated October 10th, 1887, which still stands at £436,117. The outlay ou tea extensions and the acquisition of land has increased to £22,747 11s 3d, and this will probably increase as occasion arises, although not very materially. The balaueo of the outlay for machinery and buildings is now £4,592 16s 9d. The produce on hand is £27,377 11s 9d, and while on that point I may say that really at the present moment, with the exception of a very small amount, the whole of the produce has been sold. The advances against produce and supplies for estates amount to £14,541, against £9,000 last year. I do not think there is anything else in the accounts that I have to refer to. As to the cultivation of tea during the year, you will see tbat the company has now 9,306 acres under cultivation, against 8,600 last year, of which about 4,700 acres are over four years old, against 3,600 last year. The yield of tea in 1889 was not quite up to our estimate, but amounted to 1,108,000 lbs., against 986,000 in the previous year, and the average gross price obtained, including purchased leaf, was $11\frac{1}{2}$d per pound, as compared with 1s in the previous year. We have to ask you to join with us in thanking our representatives in Ceylon for the care with which they have brought the tea to market. We have often said that it really depends more on them than on any directions from here, and I think I may say from this side of the table that we have the greatest confidence in our representatives and recognise that they equally with ourselves are endeavouring to bring this company to a successful issue. We have to regret the death of our colleague, Mr. Stewart. If there is anything else I can add to these remarks I shall be very pleased to do so. I will now formally move "That the report of the directors, dated April 16th, 1890, be received and adopted, and that a dividend at the rate of 5 per cent per annum for the year ending 31st December, 1889, on the capital paid up on the preferred shares be declared and made payable, free from income-tax, on the 30th April." Before putting this to you, gentlemen, I shall be very happy, if it is in my power, to reply to any questions you may wish to ask.

Mr. NORMAN W. GRIEVE: I have great pleasure in seconding this resolution. I do not think our chairman has left very much for me to add, but perhaps a few words from me on the subject of the management of the estates might be of interest to the shareholders. The chairman has alluded to the great importance of having a thoroughly good and efficient staff of managers on our estates. As you may be aware, before I took my seat at this board I had the privilege and pleasure of visiting all the company's properties, and carefully reporting to the board upon them. I am, therefore able to testify to the thoroughly efficient men that we have in charge of our estates. I have had experiences in other companies besides this, and I can safely say that our men bear very favourable comparison with those of any otber company in Ceylon and that I consider to be a very great advantage to us. We are also, as time goes on, building up a valuable agency business in Colombo, which we hope in course of time will be of great assistance in increasing the profits of this company. In seconding this resolution it is therefore a satisfaction to me to be able to assure you that we are doing all in our power to bring the affairs of this company to a successful issue.

Mr. C. LAWRIE said he observed that a company had been formed to search for gems in Ceylon. He would like to know whether there was any chance of any being found on this company's property. It struck him as rather an anomaly that they should have such a large balance at the bankers and have such a small amount of preference shares. With regard to the cultivation of coffee it seemed that it had nearly been given up altogether on account of the green bug, and he would like to know if anything could be done to remedy this state of matters, and again increase the cultivation of coffee, as it seemed to pay so well now. He understood that a machine had been invented to destroy the green bug.

Mr. LOWE asked what the advances against produce and supplies for estates consisted of.

The CHAIRMAN, in reply, said the directors had received information from Mr. Starey, their representative, who was at present in this country for a short holiday, to the effect that none of the Company's land was in the gem-bearing districts. They had received various offers for land, but up to the present nobody had distinctly applied for land with the idea of gemming there; indeed, most of their land was more suited for tea than for producing gems. With reference to Mr. Lawrie's other inquiry as to the balance at the bank and why they did not pay off the preference shares, the hon. proprietor might not remember that they were bound to keep those preference

shares as they formed the qualification they were compelled under the articles of association to take. They had not issued any others, indeed they had only this small amount which really was held by the directors. If they could find out how to cure the green bug, he thought they would all consider that there was a new future for the remaining coffee in Ceylon One of the directors was at Ceylon now, and he was very much interested in the machine that the hon. proprietor had alluded to. They were always on the alert to do anything they possibly could to destroy pests. The land was now so much under tea cultivation that it would be very difficult to reconvert it into coffee, and the opinion of those who knew Ceylon well was that coffee would be a thing of the past in a very few years. As to the advances against produce and supplies from estates, it was a very profitable one, and when they merely advanced on crops, and not on block, they thought they were doing the best thing: indeed, they hoped in the future to do very well in that branch of the business.

The resolution was then put and carried unanimously.

Mr. DAVID REID proposed the re-election of Mr. C. J. Lindsay Nicholson as a director. It required no words of his to commend the resolution to the notice of the shareholders, and he was quite sure it would meet with general acceptance.

Mr. WELTON seconded the motion, which was cordially adopted.

The CHAIRMAN returned thanks, and moved the re-election of Mr. Ralph A. Cameron, the managing director, to whose industry, intelligence, and zeal he specially referred.

Mr. MALCOLM seconded the resolution, which was unanimously agreed to.

Mr. RALPH A. CAMERON said he thoroughly appreciated the cordial assistance and help which his colleagues had afforded him, and they all worked with one object. He believed that the roughest part of the work was done, and that they might now look forward to the successful accomplishment of what they had undertaken.

The auditors, Messrs. Welton, Jones, and Co., were re-elected on the motion of Mr. Wilson, seconded by Mr. Malcolm.

A vote of thanks was accorded to the directors for their able conduct of the company's affairs.

The proceedings then terminated.

PROCESS OF REMOVING INSECTS FROM PLANTS.—A novel process, by Edwin P. Fowler, of National City, California, consists in dislodging the vermin and mealy-bug by means of a sandblast, which destroy yearly entire groves of Lemon and Orange trees in Florida, South California, and other tropical States. In carrying out the invention, a fan blower of any suitable construction, or any other apparatus capable of creating an artificial current of air, is employed. The artificial current of air thus created is directed against the tree or other plant, and in its transit from the fan blower to the plant, the current of air is charged with sand. Of course the force of the artificial air current must be carefully gauged, so that the sand which is projected by the same against the trees or plants will not destroy the plants together with the vermin or scale, and the sand must be sifted, so that no coarse particles or stones remain mixed with it. If the force of the air current is properly limited, according to the nature of the plants under treatment, the scale or vermin can be removed without injuring the trees or plants. In some cases it is desirable that the artificial current of air shall be heated, and for this purpose there is combined with the fan blower or other apparatus a suitable heater. It may also be desirable in certain contingencies that the sand which is used for charging the artificial air current shall be hot, and for the purpose of heating the sand before introducing it into the air current, any suitable heating apparatus may be used.—*British Mail.*

THE PROGRESS of the Gold-mining Industry in South Africa is very satisfactory, all things considered, as the following table of raw exports shows:—

First three months.	Cape Colony. £	Natal. £	Total. £
1890	309,510	116,438	425,948
1889	159,738	132,614	292,352
1888	86,820	81,429	168,249

Instead of the mining market being depressed it ought to be cheerful, but things often go contrary on the Stock Exchange. It is clear by the increased exports *via* Cape Colony that the Witwatersrand mines are eclipsing the De Kaap fields.—*O. Mail,* April 25th.

WEST AUSTRALIA has experienced many vicissitudes in connection with the reputed gold-fields there, Yilgarn and others. A fresh spurt will be given to gold-prospecting by the publication of the annexed telegram which appears in the *Western Mail* of the 12th April:—Ashburton, April 10th.—Wilson, Ford and Pat Bresnahan say they have got one thousand ounces of gold two hundred miles from here, fifteen miles from the river. My informant saw the gold, but had no means of weighing it. There is no doubt the find is a big one. Wilson who is a practical man, says it is the richest he has ever seen. The gold found consists of nuggets and coarse gold.—*Singapore Free Press.*

THE STOTT INSECTICIDE DISTRIBUTOR was to be seen in action in the Royal Horticultural Society's Gardens at Chiswick during the Daffodil Conference. The distributor consists of a metal cylinder, which is divided into several cells by means of perforated partitions. Into these cells the manure or insecticide, in solid or liquid form, is inserted. At each end of the machine is a length of tubing, one end being attached to the water-tap or garden-pump, and the other to an ordinary hose-pipe, and the water being forced through, becomes impregnated with the composition in the cells. The strength of the solution is regulated by the filling of one or more cells of the apparatus. A special form of spreader is fitted to the hose, which ensures a perfect spray. The apparatus is likely to prove of much service, and cannot well get out of order. An insecticide, "Kilmright," supplied for use in the machine, is of a soapy consistency. The spray can be used for the destruction of such pests as green-fly, thrips black-fly, &c.—*Gardeners' Chronicle.*

CINNAMON AND COCONUTS.—Veyangoda, June 1st.—Some Estates have commenced peeling Cinnamon for the *Maha Mosama* or big crop, while others will commence harvesting shortly. With the rains we had last year, and are having this year, the bushes are in bud all the year through. Speaking for myself, a month of dry weather is preferable to the continuous wet we are having, for the soil is sodden and will be all the better for a bit of drying and aeration. From all I hear, some of those who declared on honour that they would cease scraping Chips seem to value their honour less than rupees. We lately heard that Chips were scraped on an Estate south of Colombo. I now hear that a proprietor of an Estate north of Colombo pocketed his "honour" with the rupees the Chips he is scraping is giving him. He too, when remonstrated with, will doubtles say that he will give orders to stop scraping. Be up and doing, Mr. Jardine, or the good work you have done will be undone by an unscrupulous few. In spite of this being the season when our largest Coconut crops are gathered, prices are keeping up. The Manager of the Desiccating Mills is the largest local buyer. Besides the 24- or 25,-000 nuts he must be consuming weekly at his Factory, our Railway store is largely occupied with the Coconuts he is forwarding to Colombo for shipment to Europe. We have heard nothing definite of the Coconut Butter manufactory that was stated to have been started in Colombo. I hope the Superintendent of the School of Agriculture has not ceased his investigations into the Coconut leaf disease. The subject is worthy of his attention. His latest contribution on the subject is nothing more than an admirable essay on the general principles of agricultural science. He has not thrown one spark of light on the subject of his Report.—*Cor;* Local "Examiner."

CEYLON TEA PLANTATIONS COMPANY LIMITED.

The ordinary general meeting of this Company was held at the offices, 21, Mincing-lane, E. C., on Tuesday; Mr. David Reid (the Chairman) presiding.

The SECRETARY (Sir W. Johnston, Bart.) read the notice convening the meeting, and the directors' report was taken as read.

The CHAIRMAN said: Gentlemen, it is again my pleasing duty to render to the shareholders an account of our stewardship, and in doing so, I can sincerely congratulate you on the present position of the Company. In three years we have paid 45 per cent in dividends, have begun a reserve fund, and have reduced the capital cost per acre of our estates by 15 per cent, without lowering the intrinsic average value per acre of our property. On meeting the shareholders I have endeavoured, on every occasion, to make a clear and simple statement of the property we have, and what it has cost us, and to give you a short history of the year's operations, showing the main features of our policy. On this occasion I will follow the same course in as few words as possible. By referring to the creditor side of the balance-sheet you will see that our property has cost us, in round figures, as at 31st Dec. last, £135,000; and by referring to the statement of acreages, you will find we have 3,726 acres of planted land and 2,720 acres of unplanted land. Our planted land originally cost us £40 an acre. I have already told you that we have reduced that by 15 per cent, viz., £6 per acre, leaving the value as at 31st Dec. last at £34 per acre for our planted land and £4 per acre for unplanted land. In addition to this we have a tea manufacturing business of over 1,000,000 lb. a year, a commission and agency business which is profitable, and a small reserve fund of £3,000. You will see from this that our position is considerably improved from last year. (Applause.) The future of the company must always be a matter of anxious care to the shareholders, and the rapid expansion of the company has no doubt arrested your attention. Of course each step in the direction of new purchases has been taken with the special sanction of the shareholders, but the directors feel a great responsibility in a matter of that kind, since the duty falls to them of marking out the general line of policy, and recommending it to your acceptance. I feel confident that in all we have done we have acted with caution, and I hope with sound judgment. You have only to look at the statement of acreages to see the drift of our policy. It may be summed up in this, that we believe in good land and high elevation. An issue of preference stock is about to be made, and, as this is an important step, it is fitting that I should say a word on the subject. The original promoters provided in the articles for the issue of preference stock, because they believed a time would soon come when we should be unwilling to issue our ordinary stock at par, and that it would be desirable to bring in a class of shareholders who look mainly to the security which a preference stock gives them. We have made the preference holders very secure, for if the company issued preference stock up to the full extent of its powers, we should only have to earn 2½ per cent on our total capital to pay their interest, and our estates would require to possess a value of less than £12 an acre to secure them. Our new purchases are made on the assumption that they will give as good a return as the old ones. If this expectation is realised, and if we continue to make the profits we have hitherto earned, or even something less, it is clear that, without diminishing our dividend-paying power, we could place to reserve the difference between the preference interest and the profit actually earned by the capital so raised; and I think this policy should be pursued until a sufficiently large reserve fund is accumulated. That is to say, if we issued the total amount of our capital to acquire more property, and earned 15 per cent on the whole as at present, we should have £8,000 a year to carry to reserve, and thus strengthen the position of the company. Since the resolutions relative to the issue of preference shares were agreed to by the shareholders, the directors have had several proposals for increasing the capital of the company under consideration, and they decided to allow the resolutions to lapse. At an early date the form in which the directors propose to deal with the issue of preference shares will be laid before the shareholders for their sanction. Our report has informed you of our appointment of Mr. Rutherford as the managing director of this company. The large expansion of the company's business rendered it essential that we should have a salaried officer with experience of Ceylon business, a knowledge of the value of Ceylon property, and the cost of work in Ceylon, always in attendance on the company's business. I am well satisfied that the shareholders have got the right man in the right place. (Applause.) The important post of manager in Ceylon has been entrusted to Mr. Talbot, who is a large shareholder in the company, and whose high character and ability are well known. It is therefore unnecessary for me to say more than inform the shareholders that I am well assured our interests are in safe hands. Our Ceylon staff continue to give the directors great satisfaction, and this year we have inaugurated a system of leave-rules on a scale which compared with other companies, is liberal, although I do not think it is too much so. Sick leave is also provided for. The estimates for 1890 are on the table, and are satisfactory, indicating quite as good prospects for 1890 as those obtained in 1889, but it has been my practice to deal only with achieved results, and to allow each shareholder to make a forecast for himself. The result will depend greatly on the price of tea and silver, and there are many here more competent than myself to form an opinion on these abstruse subjects. I may mention to the shareholders that it is the intention of the directors in future to pay only one interim dividend, probably in November, and the final dividend in May. I have now much pleasure in moving the adoption of the report and balance-sheet, and that a final dividend of 5 per cent. be declared payable forthwith. (Applause.)

Mr. HENRY TOD seconded the resolution.

Mr. H. K. RUTHERFORD: Gentlemen, the chairman has so fully entered into the various important points affecting the company's operations for the past year that there is little I can add that would further enlighten the shareholders as to our position. It might, however, be interesting to shareholders to learn that all the reports we have received from our manager in Ceylon, and from independent sources, assure us that our estates are being thoroughly well cultivated and the manufacture of our teas are receiving full and careful attention from our superintendents. It is satisfactory for me to be able to state that our low country properties, which have fields of tea eleven years old, are in good heart and bearing well, and that the historical 100 acres of that magnificent property, Mariawatte, still continue to yield 1,000 lbs. per acre. As regards cost of production, notwithstanding we charge the cost of cultivation of all young tea not in bearing to the expenditure, the Ceylon manager has been able to lay down the company's crop in London at the low figure of 6½d. per lb. and this we consider a very satisfactory performance. As to the new purchases, many gentlemen, who are shareholders, know these estates, and will bear me out when I say that from the suitability of their position as regards a favourable climate, from the general excellence of the soil, the water power available, and the advantages of road and rail communications, these properties cannot fail to prove in a very few years most valuable additions to the company's list of first-class estates. Before resuming my seat, I would desire to say a few words on behalf of our Ceylon staff, whose aid in a large measure has contributed to the satisfactory results of the year's working. Those who have been on Ceylon and Indian tea gardens know that the work of a tea planter, if conscientiously carried out, is no sinecure. He has a real responsibility and real hard work, and in many cases not over well paid. As your chairman has told you, this company has framed furlough and sick leave rules for their officers, and you are aware they have

extra to their salaries a commission on the net profits of the estate which they work, and that both superintendents and their assistants have been made shareholders in the company on easy terms. I trust, if times continue good, we may see our way to further bettor their position. By such like consideration for those who bear the burden and the heat of the day, we are only giving them what their valuable services entitle them to, and I am sure the confidence and reliance we have in our Ceylon staff, if we treat them well in the days of our prosperity, will not be misplaced should hard times ever fall upon us. (Applause.)

The resolution was then put and carried unanimously.

Mr. J. L. Shand proposed the re-election of Mr. David Reid (the chairman) as a director of the company. Mr. Reid, he said, had been the great motive power of the company from its inception, and in its present successful position he did not think they could very well do without his services. He was very glad to hear the remarks that fell from the chairman and Mr. Rutherford about the improved position of the servants of the company. He had served in Ceylon himself for a good many years, and he knew that the way to secure good service was by being liberal masters.

Mr. Donald Mackay seconded the resolution, which was agreed to *nem. con.*

The Chairman, in returning thanks, said he gave a good deal of thought to the affairs of the company and it had always been a great pride and pleasure to be connected with it. He hoped that during his present term of office he would have as much pleasure in serving the company, and that its prosperity would be as great as it had been in the past. (Applause).

Mr. G. W. Paine moved that the remuneration of the directors for the current year be £500, coupled with a vote of thanks for the great care they had bestowed on the affairs of the company.

Mr. G. T. White seconded the motion, which was cordially adopted.

Mr. David Reid acknowledged the complimont.

The auditor, Mr. R. H. Miller, (of Messrs. Harper Brothers), was re-appointed on the motion of Mr. E. Pritchard, seconded by Mr. W. S. D. Moncrieff.

A vote of thanks to the chairman (proposed by Mr. L. F. Davies, and seconded by Mr. G. T. White) terminated the proceedings.—*Money Market Review*, May 3rd.

TEA AND CACAO NORTH OF KANDY.

Tea in the Knuckles has been doing very well. We have no cause to complain. I guess we will collar what we were behind last year and clap it into our estimate for this.

Heard that Mr. R. Boustead got an offer of £6,000 for "Maria": but would not take it—so much for cacao property. Don't know if it is true, but that is what I was told.—*Cor.*

Tea Planting Notes from India.—Sonari, May 11th:—But little is doing in the way of leaf. There is a touch of red spider here and there, but nothing to speak of. On the 6th, we were visited by a hurricane, and on one garden the tea-house was partly unroofed. Darjeeling, May 18th:—Have had some good rain within the last week, with a great change in temperature it having gone as low as 56° whereas last week it was 81°. Snow very low down the hills for the time of year. Rainfall to date:—7·69" 1890; 12·50" 1889. Mangaldai, May 13th:—Influenza has reached this, and many coolies are down with it; but now the excessive heat has given place to genial rain perhaps it may abate; let us hope so. From the apparent apathy of the Public Works Department, one would think that they had been down with Lagrippe for the last six months, as their portions of the road are still untouched, possibly waiting for the rains.—*Indian Planters' Gazette*, May 20th.

Coconuts and Cotton: Hapitigam Korale, May 19th.—For the first sixteen days of May we had only one shower of ·10 of an inch, but on the morning of the 17th thunder was heard to grumble in the distance, and in the course of the day and night ·31 fell. On the 18th the clouds cleared off, and it appeared as if there was to be no more immediately, but at three this morning, it opened afresh, and deposited 1·83 inch in three hours, and it looks like more, so I think I may safely write, that the big monsoon has fairly set in here. There is nothing new to report about the one product of the district, but the price of copra is somewhat unsteady, and will probably fall considerably when the largest gathering of the year (now nearly due) comes forward.—I hear of no experiments in *cotton* in the district, but one by the stationmaster of Mirigama, and I am conducting another, with less success than I desire hitherto. The climate is too uncertain to get the plants satisfactorily established, and they suffer awfully from a variety of insects, that roll up and destroy the leaves, and bore into the pods. Great sickness in this neighbourhood and labour scarce.

The Ceylon Commissioner for Russia.—Mr. Rogivne left Ceylon homeward-bound by the "Kaiser Wilhelm II" on Monday the 12th instant. So far the Association has voted him £100 for his expenses, and £30 to be laid out in tea samples to be purchased in London after consultation with Mr. Martin Leake and others. Mr. Rogivne will travel via Genoa to London, and when in London will collect all the information possible regarding the Russian tea trade, the amount of Ceylon tea shipped for London thither, and its characteristics, so as to supply himself with samples only of such teas as may be most acceptable to Russian tastes. Leaving London thus fully equipped he will proceed direct to Moscow, which is the commercial capital of Russia, where Mr. Rogivue will interview all the buyers and importers, and, if a fair measure of success attends his efforts to push our teas upon their attention, he will probably go on to Odessa, Riga, and other centres. One thing is necessary—Mr. Rogivne should be furnished with a complete set of photographs shewing the process of tea manufacture in all its stages. These would prove of some help to him in his work, and would doubtless attract some attention from tea merchants. Mr. Rogivue is going on a mission of great importance to the colony, and we have no doubt the Tea Fund will treat him liberally, should a fair measure of success attend his efforts.—Local "Times."

Trees for Street Planting.—Mr. William Holmes, of the Frampton Park Nurseries, Hackney, who has had considerable experience of planting in different parts of London, expresses the opinion that Planes and Poplars are much the best suited for street planting in cities and towns. He particularly recommends Populus canadansis nova, or Rumsey's Egyptian Poplar, as more likely to enable the planter to surmount the many difficulties experienced in the successful culture of trees in streets than any other. He has witnessed many illustrations of the fact, that this form of the Poplar will live and grow for years in positions where Planes will scarcely last for a season. The space in front of the London Hospital at Whitechapel affords an illustration in point. Planes were planted and died; they were renewed, and again died; when Mr. Holmes suggested the employment of this Poplar, and several were planted, with the satisfactory result that they have now stood for six and eight years, making a really splendid growth. Again at Silverton where some reclaimed land had been filled up to a depth of from 12 to 14 feet with London clay and soil, vitiated by an atmosphere charge with impurities from the many chemical and other works in the immediate neighbourhood, Mr. Holmes had an opptunity of expermenting with trees, and he found that Poplars and Ailanthus glaudulosus would alone endure; most of the others died the first season and theremainder, with very few exceptions, the second year. This is a valuable testimony, well worth the attention of planters.—*Gardeners' Chronicle.*

THE GOVERNMENT TEA GARDENS IN THE ANDAMAN ISLANDS.

By way of providing their Indian convicts at Port Blair with some employment which should prove profitable, and thereby lessen the annual expenses of the settlement, the Government of India has put down about 400 acres of tea in two estates, called respectively "Navy Bay" and "Goplakabang." The produce of these estates supplies all the requirements of the troops in Burmah—and from time to time the surplus has been sold locally, or put upon the market in Rangoon, where it appears to be rather a favourite article, selling from four and a half to twelve annas a pound. The amount of the Commissariat requisition in 1889 was 45,000 lb., and has this year risen to 72,000 which it is estimated can easily be supplied by the two gardens abovementioned. It is not necessary to discuss here the correctness of a policy by which Government interferes directly in the markets for any produce, suffice it to say that cheap Andaman convict grown tea constitutes an important factor in the Rangoon tea market.

NAVY BAY.

This tea garden is by far the larger of the two clearings at Port Blair. The first clearing was opened in 1876—and during the succeeding 6 years the acreage had risen to 152—whilst another 150 acres was opened between that date and 1887—say 302 in all. The lower boundary is the shore of the harbour—some six miles down, and it rises to about 200 feet above sea level. The lay of the land is undulating with a very small proportion that could be termed steep. The soil over the larger area of the garden is very fair as a tea soil; deep and friable —with considerable mixture of decayed cabook and fragments of quartz. Over a small extent the soil is very poor—with a large admixture of sharply broken, angular fragments of a kind of sandstone, to be seen occasionally in the patanas of Ceylon and on the poorer knolls in Avisawella district.

With an annual rainfall of 174 inches (registered in 1889-90) and within 11 degrees of the equator—the climate is admirably adapted for tea cultivation, though unfortunately "Navy Bay" is a good deal exposed to the winds which coming from the ocean almost unopposed blows very strongly in both monsoon, and this no doubt militates to a serious extent against any very great yield. The system of weeding is the one generally adopted by tea planters in India. There is no attempt at keeping the fields permanently clean, and at times the weeds are allowed to grow nearly as tall as the tea bushes, being cut down by convicts with mamoties—and the bases of the plants being forked and hand-weeded. The bushes are allowed to grow up to three feet or more and do not appear to be kept thinned out so much as in Ceylon. The managers of these estates are both experienced men who have worked in India and no doubt know what they are doing. The convict labour is paid for at the rate of R6 per mensem —no provisions being supplied by the gardens. In the opinion of the manager of Navy Bay these convict labourers do as much work as free men would, and indeed more, unless it may be in the plucking. There being no women or boys allowed on the estate, it can easily be understood that plucking by able bodied men—might well fall short of the quantity which would be done by free labour including younger hands.

The Bungalow is a two storied one built—like all the others in Port Blair—after the Burmah plan. The factory is a substantial ection of brick and tiles.

The roller—worked by hand—is one of the old type of Thompson's Challenge Roller—and though requiring a considerable power to work, it is considered capable of doing very fair work.

The jat is a good Assam Hybrid which appears to flush with more regularity than does similar bushes on the other garden which I shall notice by-and-bye.

The rainy season lasts from May to October, but the island is not subject to lengthened periods of drought such as occur in India and Burmah.

The crop of 1888-89 was something over 53,700 lb. and the estimate for the current year is 60,000 to 61,000 lb. which should pay well as the Rangoon contract is supposed to be between 9 and 10 annas a pound. The climate of Navy Bay is a very healthy one for Europeans though decidedly hot at times.

GOPLAKABANG.

The other estate on the opposite side of the harbour, though several miles from the landing place, is but little above sea level, and is situated between ranges of low hills, rising some 300 to 400 feet. The lay of the land is almost a dead level—with the exception of a recently formed clearing of small extent. Goplakabang comprises 165 acres of tea in bearing—and ten acres of new clearing.

The estate is a good deal cut up by a meandering stream and by belts and patches of bamboos and plantains, the latter being by no means advantageous to the adjacent tea plants as may well be understood in Ceylon from local experience.

The soil without doubt is better than that of the Navy Bay Tea Garden, being more friable and more free from the angular sandstone formation described above. On the slope of the valley, the surface loam is underlaid by a kind of decayed laterite, which should prove specially favourable to the tea bushes, as is indeed already observable in the one year old field, where a large proportion of the young plants already exceed three feet in height, and the whole of them exhibit a growth which I have not observed elsewhere.

The oldest tea in this garden is four and five years old and is planted five feet by five. The best fields are already pretty well covered, though topped rather high, say at three feet, and not having at first received anything like due attention.

As regards outturns of leaf, the yield for 1889 was nearly 23,000 lb. with an estimate for the current year of 28,000 lb. It must not be forgotten, however, that a very considerable proportion of the bearing area, put down at 165 acres—is detrimentally affected by the belts of bamboos &c. surrounding such small fields, and by the absence of practical knowledge of tea cultivation in the first years of its growth.

The practice as regards weeding is the same as that adopted on the Navy Bay estate, which as I have already explained is the same as obtains on most of the Indian gardens, viz. a deep hoeing after pruning and five or six light ones with mammoties followed by forking and hand-weeding immediately around the base of the bushes.

Pruning—as far as one may judge from a casual visit out of the season for that work—is not so severe as on the estates in Ceylon, but the tea being yet young it would be premature to make observations on treatment which may probably be altered as circumstances dictate in the future.

The jat on the older portion of this garden is a good hybrid, and that of the younger clearing pure Assam indigenous, which promises a larger outturn in future years.

The record of rainfall is kept from 1st April to 31st March of each year, the register for 1888-1889 being 175·18 inches, and in 1889-1890 154·18 inches.

With the exception of a small portion which is disposed of locally—or in Rangoon, the produce of these gardens is taken by the Burmah Commissariat Department of Burmah. The machinery at Goplakabang is Jackson's Manual Tea Rolling machine—with a breaker and sifter. The factory is a pucka brick-building with a single roof and built with two wings as recommended by Mr. W. Jackson in his "Notes on Tea Machinery" published by Messrs. J. Walker & Co., of Colombo. The climate of this garden has not proved so favourable to Europeans as that of Navy Bay. In the hot weather a little fog creeps down the valley during the night and hangs about the garden till the sun comes over the hills, and this fog wherever it occurs appears almost invariably to bring with it malarious fever in some form or other. It is proposed to extend operations on a rather large scale in the neighbourhood of Goplakabang, there being plenty of suitable land adjoining the garden, and the present outturn of the estates being considered satisfactory. The position of the Superintendent of this property is by no means one to be envied. He is the only whiteman on that side the harbour, and his nearest European neighbour lives at a distance of seven miles of road and a mile of salt water. His men are all convicts—not under his control, but that of the prison warder who has charge of them in Government barracks. He—is so to speak—at the mercy of any runaway ruffian who may take it into his head to commit murder.

EDMUND WOODHOUSE.

TRADE IN HIDES AND SKINS.

Among the countries furnishing hides and skins to the United Kingdom, India takes the premier position, and the trade is yearly increasing, as the export of hides from Calcutta has trebled during the last three decades. As a fact, the trade in hides may be said to be monopolised by Bengal, while that in skins belongs to Madras, due to the fact that the total number of horned cattle is greater in the area served by Calcutta than in the area served by the ports of the Madras Presidency; while the tanneries of the latter Presidency have gained a superior reputation in the dressing of skins. Hides and skins for export are collected by the agents of the merchants who are in the trade, from all parts of India, and in the year 1889, the number of hides imported into Calcutta from the inner parts of India for export, amounted to a hundred and twenty lakhs.—*Madras Times*, May 23rd.

THE SOGAMA TEA ADULTERATION CASE.

At Worship-street, yesterday Thomas Paget and Robert Pigott, trading as tea dealers at 36 Middlesex-street, Whitechapel, appeared to summonses under the Merchandise Marks Act charging them with having sold or caused to be sold certain tea to which a false trade description had been applied, contrary to 50 and 51 Vic., cap. 28. Counsel for the prosecution said that the prosecution was instituted by an association called the Ceylon Tea Growers' Association. The article sold was tea in packets bearing the brand of "The Sogama Estate." Ceylon tea bore a high name for quality in the market, and it was found that a great quantity of inferior tea was sold as Ceylon tea. It was true there was an estate in Ceylon called the Sogama estate, owned by a company having offices in Clement's-lane, City. The association, having ascertained that tea bearing the brand of the Sogama estate was being sold by certain persons, communicated with the company owning the estate, and these proceedings resulted. He proposed to prove the purchase and the analysis of the article purchased, and he would show that the tea sold as "Choice Ceylon tea, a blend of Ceylon and other choice growths," was in fact a mixture of inferior China and Indian teas. Mr. Avory, counsel for the defence, said that he was prepared to admit that the defendants applied the label and that it was not Sogama tea, but he could not admit that it was not Ceylon tea. Mr. W. J. Thompson, partner with his father as tea brokers at Mincing-lane, said he had had 30 years' experience in the trade. He had had a packet of the tea submitted to him (packet produced), and having tested it he came to the conclusion that the tea was composed of Indian and China tea. There might be some Ceylon, but he thought not. Cross-examined.—He knew there was a Sogama estate, but did not know that there was a whole district called Sogama. He understood there was not. The difference in value between Indian and China and Ceylon was about 3d. per lb. Some Ceylon tea could be bought at 11½d. per lb. He knew that the defendants were of old standing in the trade. Mr. Paget was an old friend of his own. He was not prepared to say that there was no Ceylon tea in it. Re-examined. The packets produced were ½ lb. packets, sold at 6d. He would not expect to find tea bought at 11½d per lb. retailed at 2s. George Stehn, manager of Wilson and Smithett's tea department, Mincing-lane, said he had been in Ceylon and there was no such district as Sogama. It was merely the estate belonging to a company. The witness confirmed the previous witness's opinion as to the tea sold being mainly inferior teas of Indian and China growths. A witness named Leek, [W. M. Leake] in the employ of the prosecuting association, gave evidence showing that the packets were bought from a retail grocer who was written to and who gave up the name of the defendants as the sellers to him, the defendants being blenders of tea. The witness added that the defendant Paget called on him and said he would be willing to pay the Sogama company a royalty to be allowed to use the name on the label. Mr. Bushby asked whether such a course was usual in the tea trade. The witness could not say. Mr. Avory, for the defence, denied any intention at all to defraud. They had used the label innocently and were prepared to prove that the tea was fine tea of Ceylon growths with a blend of other growths. The defendant Paget was then called, and he said he had carried on business, since 1852. The tea in question was Ceylon and Indian tea, no China being used. It was blended from teas costing from 10d. to 1s.1d. per lb without duty. His firm had used the label without any knowledge that they were infringing any person's right. Cross-examined, he said that the firm made two blends—the "Sogama" and the "Queensberry." He knew there was a "Queensberry estate" in Ceylon; also that there was a "Sogama," for he had purchased their tea. He supposed the owners of the Sogama estate had some rights to the name. He was prepared to admit there was no Sogama in this tea. Asked why the name of a blender was not put on the packets the witness said that tea grocers did not like the public to know where they got the teas from. ("Shame" in court.) The witness was pressed as to the cost of the tea used in the blending, but he said he was not prepared to expose trade secrets. Asked what proportion of Ceylon tea was in the blend, he said he was not willing to answer and divulge a trade secret. Mr. Avory contended he was not bound to answer. Mr. Bushby said if the question was pressed it was unfortunate that the witness should have gone contrary to the law. He and the public would draw their own inferences. The question was not pressed, Mr. Avory remarking, amid laughter, that if the witness had to state the secrets of the trade any grocer could make the blends for himself. Mr. Bushby, in giving judgment, said the label "Sogama Estate" tea distinctly misled the public, and that was a serious evil, which must be put a stop to. He imposed a fine of £10, and allowed 25s costs. The court was crowded, and a

good deal of feeling and interest were exhibited during the hearing.

EDITORIAL ON THE ABOVE IN THE LONDON "TIMES."

The remarks in the Chancellor of the Exchequer's Budget speech on the retail price of tea are curiously illustrated in our Police news this morning. Two tea-dealers, Mr. Thomas Paget and Mr. Robert Pigott, were brought before the magistrate at Worship-street on a change of having sold tea to which a false trade description had been applied. The tea in question bore the brand of "The Sogama Estate," and it was not contented on the part of the defence that it was rightly thus labelled. What label it ought to have borne was left undecided to the last. It had been described by the vendors as "choice Ceylon tea, a blend of Ceylon and other choice growths." The first expert who was called stated in evidence that he had had a packet of the tea submitted to him, and that he had tested it, and had come to the conclusion that the contents were made up of Indian and China tea. He has not prepared to swear that there was no Ceylon tea in it, but he did not think there was any. The next witness spoke substantially to the same effect. He was confident that most of the "choice Ceylon tea" was nothing but inferior tea of Indian and China growths. Mr. Thomas Paget, on the other hand, maintained firmly that the tea which he had sold was Ceylon and Indian tea, and that no particle of China tea had been mixed up in the blend. But on the main charge he had no defence ready. He had sold tea with the brand of the Sogama Estate, and this he acknowledged it had no scintilla of a right to bear, since, whatever it was, none of it was Sogama tea. This admission was all that he could be induced to make. When he was questioned about the cost of the "choice growths" which he had used in blending his tea, his reply was that he was not prepared to expose trade secrets. On the amount of Ceylon tea in his blend he was equally reticent. It was a trade secret which he was not willing to divulge. But whatever the quality of his tea, and however much or little of Ceylon tea there was in it, it had certainly been misdescribed, and its purchasers had been thus misled. Some severe remarks from Mr. Bushby and a fine of £10, with costs allowed to the prosecutors, concluded the case.

Tea is a subject of very general public interest. We fear, therefore, that there will be widespread dismay and surprise at the amount of mystery with which the tea trade is shown to be surrounded. The object of those engaged in it seems to be to keep everybody in the dark. There are trade secrets at every stage. In dealing with the report this morning, we must begin with the wholesale tea blender, since the case in Court does not carry us any further back than this. He is unquestionably a man of mysteries. How his mixtures are made, and at what original cost he obtains the materials for making them, is his own private affair, and no one but himself is to know anything about it. His customers, the retail tea grocers, are men of like mind. They do not wish the public to know where they get their teas, and accordingly they prefer packets which have no blender's name upon them. The blender, we need hardly say, is ready to accommodate them in so simple a matter. That they object to packets with high-sounding titles upon them we are not told, and we should not believe it if we were. The evidence given yesterday at Worship-street is too clear to the contrary. But, however unwilling the defendants were to allow us a glimpse into their trade secrets, there was more than one revelation made in the course of the case for the prosecution. It was stated, and it was not contradicted, that an offer had been made on the part of one of the defendants to pay a royalty to the Sogama Estate Company for the right to use their labels. Now, such a right as this would not need to be bought and paid for if the contents of the packets corresponded with the labels outside. Sogama tea could be described as Sogama tea with no risk of a penalty under the Merchandise Marks Act. The offence charged yesterday was, not that labels had been used on which no royalty had been paid, but that there was nothing in the packets answering to the labels. We come next to the quality and cost of the tea thus misdescribed. Choice Ceylon tea mixed with other choice growths is the blender's account of it. Inferior Indian and China tea is the corrected statement on the part of the prosecution, with perhaps some Ceylon tea added, but more probably without any. We must leave our readers to choose between the two stories. They cannot both of them be true. As regards the cost of the tea, much will depend on the version which we adopt as to its quality and place of origin. We learn that some Ceylon tea can be bought at 11½d per lb. and Indian and China tea for about 3d less. If, therefore, the incriminated packets were rightly said to have contained little or nothing but inferior Indian and China tea, we may put the blender's outlay at about 8½d a pound. The price charged to the retail purchaser of the so-called Sogama tea was 2s per lb,, so that there is a good margin for profit on the transaction. Mr. Thomas Paget's account was that the tea he used cost from 10d to 1s 1d per lb. * without duty. On the proportions used of each sort, and on the joint cost of his materials, he refused to say anything. Shall we be wrong in assuming that he put in the 10d tea with a freer hand than that at 1s 1d and that possibly the average cost of the whole was not greatly in excess of the lower of the two sums? This reduces the profit as shown by an adverse witness, but it leaves it tolerably high still. In the absence of complete evidence, we can come to no definite conclusions either way. The presiding magistrate, Mr. Bushby, has drawn his own inferences, but he has not told us what they are. The public, he adds, will draw theirs, so that we may be well content to leave the case as we find it, and to remain in ignorance about matters on which neither Mr. Bushby nor the public are in any need of our help.

There is one point of interest on which Mr. Bushby sought to be informed, but on which the witness for the prosecution could throw no light. Is it usual in the tea trade to pay a royalty for the right to sell goods under the name of some one else, and with no regard to the truth or falsehood of the description? Possibly, the more usual course is for the fraudulent label to be used, with no money paid for it and with no leave asked. That this is sometimes done we are entitled to say—the case on which we have been commenting is proof of it. But a deception of this kind is only possible under certain conditions. There must be at least two parties to it—an unscrupulous vendor and an unskilled purchaser. This latter condition is very commonly met. The public, as a rule, knows very little about tea, and it can be put off accordingly with very indifferent stuff. The tipplers, as Mr. Goschen terms them, have a more formed taste. For tea drinkers almost anything will do, and as long as this state of things continues there will be shops found from which they will be served with almost anything—except, indeed, with good tea, sold frankly for what it is.

* This was a misreport: these are the prices of pure Ceylon tea.—ED. *T. A.*

LIBERIAN COFFEE IN S. INDIA.

A Planting Correspondent writes to us:—Whatever may be said to the contrary by owners of specially favoured properties, I think it is generally admitted by those who have been longest at the business, and have the widest experience of districts other than their own, that the "good old times" have passed away probably for ever. Almost any planter you meet is quite willing to admit this sad fact for other districts or even for his neighbours: but it is naturally hard for a young, sanguine man to force himself to believe that he is not to be the exception that proves the rule. His property, on which a lot of money, we will say, has been laid out is just at its prime, and has been liberally manured, prices are tremendous, exchange is much in his favor, and he fondly hopes that 25 per cent. on his capital can always be made at coffee "by a man who knows his work, and does'nt mind spending a little money." But some how, generally, the crops begin to fall off in sp e of the liberal treatment, and of oven greate expenditure in manure than was ever dreamed of in old days. "Next year" like the bird in the fable leads him on until at last he gets sick and weary of it, and instead of retiring from business with a small fortune as he fondly hoped in ten years, he heaves a sigh of relief which he sees what he thinks will be his bare expenses in the form of crop set upon the trees. Of course there are estates, even districts, which have been mines of wealth to their owners, and long may it be so. I am only writing of the *general* course of things which the statistics of coffee exportation will I fear show to be steadily, even if unevenly downward: like an ebbing tide, alternate years being better than the one before, but worse than the one before that. We all know what has happened to Ceylon and Java and it is believed that America about which it is extremely difficult to get any certain information) is keeping up her figures from the yield of large new districts which have been opened up of late years.

In India the best land was taken first, and is now exhausted, or nearly so, new clearings on inferior land though opened with far more knowledge and skill, and expenditure of manure, shaded too when necessary are as a rule nothing like the old estates in quality, and not likely to last one quarter of the time. There can be but one reason for this, viz., that coffee Arabica is so deteriorated in health and strength by the continuous attacks of leaf disease during the past 20 years that, except under peculiarly favourable circumstances it is practically dying out, the only effect of heavy manuring being to put on a new crop of leaves which are promptly swept off by our enemy as fast as they are formed. It is sadly true that instead of passing away, as we fondly hoped at one time, this pest seems now more vigorous than ever, anything like even a very moderate crop is invariably followed by a specially severe attack, and sanguine indeed must be the man who really believes that the end of vastatrix will come while there is a leaf of coffee left to feed on. We know that in Europe an almost identical fungus has attacked the vines, and in some countries utterly destroyed the old European kinds. The American variety, however, I am told, is now being planted with success as it is found able to grow and flourish in the ground from which the other had been dug out and burned because its constitution is sound and strong, and it is able to resist the foe. After watching the thing for some years, I have come to the conclusion that a similar state of feebleness has been brouhgt upon our Arabian coffee and that as regards low lying districts *anyhow* it will be necessary to replace it with the strong African variety called "Liberian" if we are to grow coffee at all. Now at this stage I know it will be said "why that wretched fraud was tried and abandoned long ago in the low country of Ceylon; not only did it get leaf disease but it gave a very bad sample of coffee and very little of that oven. No one now believes in it." To this I reply that various sorts of bad African coffee were palmed off on the unfortunate planter at the time when attention was first called to this giant kind. These are somewhat similar in appearance at first, but are really very different to the true Liberian which is practically free from fungus (only the delicate seed leaves getting it) is a tree not a bush, a heavy cropper and yielding a good sample with no hollow beans.

Some 15 years ago I received a couple of Liberian plants from a number presented to a Planters' Association by Government. These had come out to the country, I believe from Kew direct, in a wardian case. Planted in a back garden and almost unnoticed and uncared for, they grew broad and high till now they are about 26 feet and have apparently no intention of stopping. In the evil report soon after prevailing regarding Liberian coffee, I supposed there was nothing in it till at length I began to notice that the trees were bearing very well, and that there was no trace of leaf disease. Then I planted ont 2 or 300 seedlings in a new clearing along with Arabica, and these, now 7 or 8 years old and in a more sheltered position than their parents have done even better. Planted 10 by 10 over Arabica they have now run up to 16 or 18 feet, all exactly of one type, and are bearing exceedingly well; the crop on them for this season cannot well be taken at less than 3 lb. of clean coffee per tree. The Arabica under eath them has suffered frightfully from fungus regularly every year, yet I challenge anyone to find a sign of it on them. A few of the old leaves every year turn yellow and tumble off as was the natural way of our old staple before the days of leaf disease as I well remember before 1868. We know that Liberian coffee will grow at the sea level; the ones above referred to are at 2,500 feet in sheltered bamboo land: whether they will do well at higher elevations remains to be seen, but as far as I can see I am satisfied, and only regret that I did not do eight yea.s ago what I am doing now, viz., plant Liberian all over my clearings *with the Arabica* and let the best win. To sum up the points of difference between Liberian and Arabica I find as advantages:

1st. That it does not get fungus or only in such a way that the health of the tree is in no way affected

2nd. That it is a tree, not a bush, running up to 30 feet in height before 15 years old and in consequence is not injured by drought.

3rd. That judging by the trees in evidence and the way they go on growing, and by the fact that they do not come into bearing till 4 or 5 years old, this variety may be taken as much longer lived.

4th. That it is a heavier bearing tree when once fairly started; those in evidence now yielding 10 to 20 cwts. per acre, calculating on the clean coffee yielded, and admitting that only some 700 trees to the acre can be grown instead of at least double that number of the old kind.

5th. That being a deep-rooted plant, it is not affected by drought, while a very slight shower is quite sufficient to bring out and set the blossom; which moreover has the further advantage of fading and falling off within the day of its opening so that it is hardly possible that it can be injured by rain or hail as is so often the case with the delicate Arabica blossom. Even in the very driest season, when the other plants appear on the point of destruction, these look cool and green and not turning a leaf.

6th. That the cost of cultivation is comparatively little. There is *no pruning to do* beyond pulling off the suckers for 2 or 3 years to prevent the tree from running up into too many stems, the crop is carried on the same wood (and extensions of it) year after year, and there is therefore no old wood to cut out. The shade of a thick, tall tree like this where they pretty well cover the ground, would effectually prevent weeds from becoming troublesome, and as the roots are deep down the debilitating effects of weeds even if they did grow, would be very little felt.

7th. The berries (of the size of a walnut) remain firmly fixed on the tree for *many weeks* after they are ripe enough to pick, eventually they fall off, and may be gathered off, the ground. In case of a scarcity of labour this might be an advantage.

Against these good points we may set the following:—

1st. That this species gives very little return till at last the 5th year, while in low lying districts some return is got from Arabica in the 2nd year.

2nd. That the value in the London market from a sample lately sent home, is about 10 per cent lower than that of ordinary coffee.

3rd. That in Districts under the South-West monsoon, whose flowering season is in March and April, the crop instead of beginning to ripen in October and finishing in January or February, takes a whole 14 months to ripen. The flowering season is the same as the other, but though some berries will turn ripe in the following April, much of it will not be ready to gather till July. Thus the tree carries two crops at the same time, and all mixed together in the same branches. Sometimes at the end of the spring, we may see at the same time the crop of the previous season as large as plums, and partially turning red, the crop of the current season the size of peas, and a further sprinkling of the curious 8 petalled, heavily scented blossoms as large as the palm of a child's hand. All these mixed together among the large dark glossy leaves give the tree a most rich and handsome appearance.

There are now one or two points about which some information may be of interest.

Picking.—There is no difficulty about this, a notched bamboo enables the cooly to get up among the branches, and he then strips off all that is ripe, or nearly so (taking care not to rip off the small berries) dropping it all on the ground, and collecting afterwards into baskets.

It takes 4 bushels of these huge cherries to make one of Parchment (instead of 2 as with Arabica), but even so, the fruit being so large, a cooly can pick quite twice as much as of the other, and the cost per ton of clean, would be much the same.

Curing.—I have seen advertisements of special pulpers made in Ceylon for Liberian coffee and have no doubt that they are as effective as they are represented. Anyone growing a quantity of this coffee would have to employ machinery.

I have tried experiments on a small scale with my cherry, and found that it was no use to pass the stuff through an ordinary disc pulper (set of course very wide) because the husk never (at this elevation) gets soft enough to squeeze out below the chop but rolls up into a hard ball, and comes out with the parchment in front; and I found that when the chop was set wide enough to allow the husk to pass, the bean went with it. Moreover the work was so hard that four coolies were completely tired out in pulping 2 bushels! Then I found that the simplest way of getting at the parchment was to put it up in heaps in the pulping house *to rot.* This may seem barbarous, but the colour of the clean coffee so treated was quite as good as some treated in the ordinary way, indeed the parchment envelope of the bean is so thick and strong that it completely protects it from injury from heating. Moreover this kind of coffee will carry nothing but a dead whitey-green colour no matter how the curing may be done. If allowed to dry in cherry some heavy peeler might perhaps break it up, but it seems to me as hard and tough as the very best road metal, and I much doubt whether a coffee curing firm would undertake it on the usual terms.

As regards the drinking qualities of this variety, I can safely say that no one who had not previously been told would know that he was not drinking the pucka article, the same quantity of powder goes further and I cannot notice any inferiority of quality. Unsuspecting guests have often said "may I have another cup of this excellent coffee" and they usually look somewhat surprised when told what it was. If you try to sell it in the hazaar whole and clean (looking something like date stones in shape,) natives decline to buy it. "This one kind bad imitation coffee" they will say, but if you smash it up and mix a little dirt with it they will take it readily, and never find out the difference.

Planting.—Owing to the seedling throwing out a strong, deep, tap root something like that of a jack tree, I am inclined to think that when a pantation has to be made it would be better to have lthe pits made ready by May, and then to put one or more seeds in each pit as early in the South-West monsoon as possible, so that the seedlings may get established before the end of the North-East monsoon in December. But if not grown to any great size they can be lifted with a little special care from nurseries in the ordinary way. Considering the fact that Liberian Coffee does not come into bearing till 2 or 3 years after the other, it may probably be a wise plan for one going in for its cultivation, to pit his clearing 4 by 4 and to plant *Arabica,* afterwards putting in the giant kind down every other row, making them thus 8 by 8. The Liberian is much too robust to take any notice of its little friend, while by the time it has come into bearing you may safely assume that the Arabica has given what it can in maiden crops, and unless heavily manured has already made arrangements for returning to a better world where there is no fungus.

It is said that the civilised but effete nations will one day (when magazine rifles are common) have to yield to the iron constitutioned African, who can more than hold his own physically, and multiply in any climate, and here shortly we may perhaps see our poor old worn out King, eaten up with disease, and quite unable to do anything but keep himself alive, deposed in favour of his strong and healthy African cousin. I shall be delighted at any time to show the trees on which my experience has been gained to any one who takes an interest in the subject, or to give any further information in writing. Enclosing my card as a possible means of communication.—*Madras Mail,* May 10th.

THE INDIAN TEA EXPORT SEASON it will be seen from our special telegram, elsewhere, has closed with a total of shipments to all quarters of 103,642,000 lb. This is about 3½ millions below the estimate for the season, which stood originally at 106,941,160 lb.

THE "SISAL HEMP" PLANT is a native of Mexico, and Dr. Trimen does not think it has been at any time introduced to Ceylon; it is therefore very unlikely that anyone should have seen it growing in the N. C. Province, as our correspondent Mr. F. Cummins supposed he had. But who is to be first to try the plant on a considerable scale, and still more who is to follow in the footsteps of Mauritius planters, in utilizing local aloe fibre and making shipments to try the market on a considerable scale?

THE VICTORIA REGIA in the "Gordon Gardens" has not only flowered and fruited, but is reproducing itself in an immense number of self-sown seedlings which Mr. Nock—who is in town for a day or two—describes as perfectly healthy. These seedlings will be available for distribution o applicants who will take the trouble to experiment with them. The seed in future might be scattered in the Lotus pond, near Skinner's road, and over other pieces of water in or near Colombo, in the hope of spreading so notable a plant in our midst.

CINNAMON.—A discovery has been made which shows that the love of our ancestors for drinks spiced with cinnamon was fully justified. What were not the Dutch ready to do to procure cinnamon and other spices for their mulled wines, and what wonders of navigation did they not accomplish in their lumbering vessels in order to fill the spice-boxes of their housewives? According to the Paris correspondent of a contemporary, Dr. Chamberland, M. Pasteur's chief assistant, has just discovered that cinnamon is fatal to the typhoid microbe, which must infest the sluggish waters of the Netherlands. This will be news for cinnamon growers.—*H. & C. Mail.*

Jamaica.—The last *Bulletin* of the botanical department contains articles on the culture of Coca Erythroxylon) Coca), and on the abandonment of Orange culture in the Azores, due to a disease ("gumming"), and to the unremunerative prices obtained by the growers, Other articles refer to the manufacture of Lemon essence in Sicily, and fruit-candying in Italy.—*Gardeners' Chronicle.*

In the Queensland Botanic Gardens, Rockhampton, which is under the Tropic of Capricorn, as a curiosity in the adaptability of plants, I may mention that last week we had Pine-apples and Apples gathered from the same bed, the Apples are small, but well flavoured. A few days ago, a station owner out West told me there was a species of Ipomea (I. calabra, tuberous rooted) growing in the scrubs on his station used as food by the blacks; he describes the flowers as deep purple, and promised to have some of the tubers taken up, and sent down the first chance. We are having a grand season here. I would like you to see how things are growing with us at present.—J. S. Edgar, Rockhampton.—*Gardeners' Chronicle.*

Comparative Sales in London of Indica, Ceylon and Java Teas.—From the figures in Gow, Wilson & Stanton's circular, for packagee brought to auction in the 11 months from 1st June 1889 to 2nd May 1890, it will be seen that while Javas decreased by 18,462 packages and Indians increased only 87,685 on 1,012,634 packagee, the increase in Ceylons was almost 100,000, the exact figures being 99,997 increaee on 345,255 packages. Taking percentages, Ceylon is very far in advance of India,—an increase in our case of about 30 per cent, against about 8 per cent for India.

A New Flower.—The latest *Field* gvies the description of a flower which would appear to be admirably suited to adorn our Indian gardens in winter:—"A new plant, that seems to have a great future before it, is Gerbera Jamesoni, and from what we have seen of it, both in this and last season, it should become of use in private gardens. It flowered in the Royal Gardens, Kew, last June, in the cool house; but a plant was also tried in the border, and gave great hopes of this Transvaal wilding as a hardy plant for the border. It was found by Mr. Jameson, near Barberton, in the Transvaal, and to Mr. Tillet belongs the honour of first introducing and flowering it. The leaves are of the richest green, hairy on the under side, and arranged in a rosette way, the flowers each about 4 in. acrose, and borne singly on a etem about 12 in. high. The shape is distinct and striking each petal being narrow, and the whole so arranged as to form a large star, the colour of which is orange scarlet. Even if not of sufficient hardiness to stand the winter, it will make a useful pot plant for the greenhouse, as not much heat is required."—*Pioneer.*

Planting Trees in Towns.—Some time ago Mr. Robert Walker, the efficient and hard-working keeper of the Victoria Park, read a couple of papers "On the Planting of Trees in Towns." The papers were interesting, and fitted to be extremely useful; Mr. Walker's own experience in planting trees along the margins of streets and in other urban localities being considerable, while his information on the subject, including the choice of proper varieties according to locality, character of soil and surroundings, &c., is extensive. We are now glad to see the papers, as "revised by the two Aberdeen members of Mr. Ruskin's Guild of St. George," issued in a very neat and attractive form, with some eight choice tree illustrations showing on plate paper examples of the Silver Birch, the Horse Chestnut, the Lombardy Poplar, the Spruce, the lime, the Oak, and others. We commend the print to the attention of all interested in the highly commendable work of improving the amenities of the city.—*Aberdeen Free Press,* May 3rd.

Artificial Gems at the Paris Expoeition are said to have surpassed anything ever before shown, some of the specimens puzzling even dealers and experts. The artificial pearls were eepecially successful, no meane being found to dietinguish the genuine from the artificial except the use of a file.—*Fiji Times.*

London Purple.—A correspondent in Kent who has damaged his Apple trees by using the above substance with water in the proportion of one to twenty, thereby following the instructions given him by the firm which supplied it gratuitously, is much to be pitied. The safer proportion would be one tablespoonful of London Purple to one gallon of water, for use on trees in leaf.—*Gardeners' Chronicle.*

The Mango Season.—Those of us who have been looking forward to the mango season cannot but be disappointed at the poor specimens of this year's crop which are everywhere being offered for sale. We are, most of us, under solemn promise to our friends "to be sure to send them some good mangoes," and, though we would fain escape the mild vituperations and covert innuendoes of "pie crust promises" &c., which are sure to fall on our devoted head until we pledge ourselves more deeply for the future, we feel that we cannot send them the wretched things that are offered to us as mangoes. For the lover of the mango likes his mango good; a good mango is something to remember. It is as Mr. Elphinstone, the historian of India, says, the best Indian fruit, at once rich and delicate, and all other fruits are comparatively insipid beside its intensity of taste. There is something in it, which is nothing less than voluptuous.—*Madras Times,* May 23rd.

Silk.—In a review of the trade in silk for 1889, the *Weekly Mail,* an English journal of Yokohama, observes that this industry is becoming more important every year. New plantations are laid out, new filatures and re-reeling establishments are started, new firms and companies begin business, swelling the volume of the trade, and constant improvements introduced into the growing and reeling of silk are making the Japanese product more popular with manufacturers in Europe and America. Not only are "Japan raw" and "Japan waste" becoming universal favourites with the consumers of the world, but the goods woven in the Japanese looms are finding their way to Europe and America, where the beautiful fabrics of artistic Japan are greatly appreciated. In 1889 the great staple export, raw silk, figures in the returns for the large total of 40,808 piculs (of 133 1-3lb. each) valued at $26,332,900, as against 46,963 piculs, valued at $25,899,700, in 1888. In the month of June, when all attention was given to the harvest, a partial failure of the crop in Italy turned special attention to Japan. It was then believed that the Japanese export would be greater than that of any previous year and would amount to 50,000 piculs; but in the result neither the cocoon crop nor the autumn crop of *bivoltini* turned out as eatisfactory as was anticipated. The export of waste silk, including pierced cocoons, was 27,915 piculs, valued at $2,509,500, against 34,382 piculs, valued at $2,794,700, in 1888. The trade in manufactured silks grows year by year. Large factories, with new and improved machinery for warping, winding, weaving, and dyeing, are being constantly erected, and the industry is fast developing in Japan. The United States is at present the best customer for these goods, but England, France, Germany, Canada, and Australia are rapidly entering the field as competitors in the purchase of these fabrics. At the present rate of progress, the value of woven silks exported will soon exceed the value of the tea annually shipped from Japan.—London *Times.*

THE ECONOMIC USES OF LEAVES.

Of the three divisions of Nature's products, man is most chiefly indebted to the vegetable kingdom, whether for his food, medicine, or domestic comforts. Every part of plants and trees is more or less utilised by savage and civilised men, and a common category might be furnished by the various uses of the separate parts—the roots, stems, sap, bark, fruit and seeds, and leaves. If we take the last-named, the foliage, apparently the most insignificant part of the plant, how dependent are we on these for food, clothing, medicine, dyes, stains, and various comforts.

The miscellaneous application of leaves for different purposes as domestic appliances, and for manufacturing uses, of themselves, would furnish a long list; some few of these we may pass under notice, because their adaptability and usefulness are mainly confined to tropical countries. It is true that some leaves have been utilised by the papermaker, as in those of the dwarf Palm, Maize leaves, and others, but this is only on a small scale.

The leaves of many Palms are largely employed for making hats. Those best known are Panama hats, so named from being shipped from that port. These are made from the finely-plaited fibre of the leaves of a South American Screw-pine (Carludovica palmata). These hats are much prized for wear in the Tropics, being light and flexible, and can be washed and bleached repeatedly. The tree has no stems, the leaves have long slender petioles, springing from the ground; they are some 2 feet long, fanshaped, and four-parted, each segment being again ten-cleft, so that when folded in venation, each segment on its own rib, there are eighty layers in a young leaf. The tree occurs only on the slopes of the Andes. About 200,000 dozens of these hats are made in Ecuador and different States of South America. These hats are distinguished from all others by consisting only of a single piece, and by their lightness and flexibility they may be rolled up and put in the pocket without injury. In the rainy season they are apt to get black, but by washing with soap and water, besmearing them with lime-juice, or any other acid, and exposing them to the sun, their whiteness is easily restored. The plaiting of the hats is very tedious and troublesome; the coarse ones may be finished in two or three days, but the fine ones take as many months to plait. It commences at the crown, and finishes at the brim. The hats are made on a block, which is placed upon the knees, and requires to be constantly pressed with the breast. The hats vary in price, according to fineness and quality, from 20*s*. to as many pounds.

The unexpanded fronds of Livistonia australis, prepared by being immersed in boiling water, are dried, and the fibre thus obtained is much valued for the manufacture of hats in Australia, which much resemble the celebrated Panama hats.

The rough leaves of the Chumico (Curatella americana) and of Davilla lucida are used for cleaning iron, and polishing and scouring wood, Curatella alata is used in the West Indies for polishing bows, sabres, &c.; and C. sambaiba in Brazil—indeed, they serve all the purposes of sand-paper to the Indians for polishing their blow-pipes and war clubs. The leaves of Celtis orientalis are used for polishing horns in the East Indies.

The foliage of Guiacum officinale is very detersive, and is frequently used in the West Indies to scour and whiten floors, which it is said to do better than soap.

Leaves sown together are much used in India as substitutes for the plates and dishes of more civilised life. It is not always poverty that leads natives to use them in preference to metal or porcelain articles, as caste or custom has often some influence in the matter. The leaves principally used are those of the Egyptian Lotus (Nelumbium speciosum), Bauhinia species, Semecarpus anacardium, Butea frondosa; those of the Banyan (Ficus bengalensis), by Brahmins, and the Plantain-leaf (Musa paradisaiaca).

The leaves of Bauhinia Vahlii are used in the construction of the curious, rude leaf-bellows in Sikkim with which the natives of the hills smelt iron. These leaves, when sown together, are used as plates, cups, rough tablecloths, rain-hats and caps. The leaves are heart-shaped, and above a foot in breadth, and the same in length. Sewn together with twigs, they also serve for baskets for holding pepper, turmeric, and ginger, and are likewise used for thatching.

Under the name of "Chattahs," a kind of umbrella-hat or sun-shade is made in the East of the leaves of the Licuala peltata and the Talipot Palm, or a Plantain leaf. These Chattah hats are much worn by the ploughmen, cowkeeprs, and coolies of Bengal and Assam.

The large fan-shaped leaves of the Talipot Palm (Corypha flabelliformis) are like those of the Palmyra Palm, carried over the heads of people of rank as an umbrella, and are also used for making books, and for various domestic purposes. The leaves are also cut up into neat bracelets, worn by Santal girls in India. Those of Vanda Roxburghii, split, are also worn by them as anklets. Those of another species, Borassus æthiopicus, occur as much as 12 feet across; they serve also for the manufacture of baskets, mats, ropes, and sieves. The leaves of Nipa fruticans attain a height of 15 to 20 feet, presenting a very handsome appearance, resembling the fronds of huge Ferns. This graceful Eastern Palm is utilised in various ways, the principal being in the manufacture of thatching for house-roofs, in the East called "Ataps." This manufacture is quite an industry of itself, and affords employment to many natives, chiefly women, the men simply bringing cargoes of the fronds to the women, to be stitched with split rattans, and made up. Atap roofs are the best adapted for these climates, for while the winds are never strong enough to blow them away, they afford the coolest protection against the sun of any kind of roofing konwn.

The leaves of the Palmyra Palm (Borassus flabelliformis) were formerly used like paper, to write books on, and to this day they are applied to this purpose in Orissa, Southern India, and Ceylon, where an iron style is employed to write upon them; in certain parts of Bengal young children use them to write the alphabet lessons on. They are largely employed for making pans, bags, winnows, hats, umbrellas, and for thatching, &c. The leaf takes a dye well, and is worked up in Madras into pretty coloured patterns in baskets and mats.

The slips of Talipot and other Palm leaves are coming into European commerce for the manufacture of ornamental braids, and in the construction of straw, or Leghorn hats. The fibre obtained from the base of the leaves of the Chusan Palm (Chamærops Fortunei) is used by the Chinese for making hats and coarse clothing. The sale of Palm leaves for decorative purposes in the towns of Elche and Alicanto in Spain, produces a considerable income to the towns.

Kadjan mats, manufactured out of Nipa leaves, are indispensable for travelling purposes; packed up in the smallest compass when not required, each mat is capable of affording sufficient cover at night for two or three persons, either in boat or forest journeys. They also form, almost exclusively, the material for side-walls and divisions within houses. The young leaf unfolded and dried, under the name of Roko, forms the favourite covering for cigarettes in the Malayas Peninsula in preference to paper.

The large leaves of the Teak tree (Tectona grandis) are used for plates, for packing, and for thatching. The leaves of Cordia myxa are employed as plates in Pegu, and to cover Burmese cheroots. In Bangalore the leaves of Canna indica are used by the natives in lieu of plates, to serve their Ragi or Millet puddings and other dishes on.

The leaves of the Papaw tree (Carica papaya) are employed by the negroes in washing linen, as a substitute for soap. They have also the property of rendering meat wrapped in them tender, owing to the alkaloid papain which they contain, and which acts as a solvent.

For cordage and other textile purposes, numberless leaves are used, and they serve very generally for packing and wrapping up small parcels in India

In Guiana, Tibisiri fibre is obtained from the inner surface of the spiral leaves of the Ita Palm (Mauritia flexuosa); it is used by the Indians for making hammocks, &c. The leaves are cut before they are open and the midrib separated by drawing each division of the leaf through the finger and thumb. After drying, the fibre is ready for use without further preparation. About a quarter of a pound may be procured from each leaf, and if the central leaf is left uninjured, no evil effect is produced on the tree. Bags or matting could be cheaply and easily made from this fibre, as well as hats, similar to those known as Panama.

The foregoing is only a brief enumeration of some of the many uses to which leaves are industriously applied.—P. L. SIMMONDS.—*Gardeners' Chronicle.*

MARSH-PRODUCED DISEASES.

IT is not every one who has a proper conception of what malaria means and really is. Malaria really means bad air; but for some reason, difficult to define, it has been restricted to the emanations from swampy districts. For example, a man who has fever and ague (or, as it is known among professional men, intermittent fever) is said to be suffering from malaria; whereas a man suffering from the noisome effects of sewer-gas in his house is assuredly the victim of malaria, though not suffering from intermittent fever. The fevers, then, and the ailments following in their wake, that are produced in districts where there are warmth and decaying vegetable matter, are said to be malarial.

Malaria is a hydra-headed disease. Even that one form of it, "fever and ague," presents itself in various forms. It occurs most frequently in newly-populated districts; and in lands from which it has been supposed to have vanished it has been reproduced when their soil was turned. A man who has suffered once may suffer again, after a score of years, by simply running down in health. It may appear first as a chill, followed by intense fever, which, in its train, is followed by a sweating stage. It may appear simply as an intense neuralgia, and it may be noted that the most frequent form of malarial neuralgia appears over the brow, and is known as "brow ague." As if there was some similarity, distant, no doubt, between paludal fevers and sewer-gas poisoning, it may be noted that neuralgic symptoms characterize both, and quinine certainly seems beneficial to both.

Formerly, quinine, and, indeed, all the cinchona preparations, were more appreciated than they are at present. In the whole range of medical treatment nothing ever is encountered which is more wonderful than the action of quinine in malarial fevers. With its administration the diseases disappear, and that quickly. No doubt the dwellers in old countries and the residents of old towns would derive great benefit from a far freer use of quinine; and here we should take occasion to point out that the ordinary sulphate of quinine, the form usually used, is objectionable; it irritates the stomach, is quite insoluble, and is frequently not all absorbed.

The soluble quinine Tabloids are the best preparation, inasmuch as one of them dissolves in a little water the minute it touches it. They do not irritate the stomach, can be taken without the taste being perceived, and none of the drug is lost in the system. Those suffering from enervated health, whether from sewer-gas or marsh emanations, overwork, worry, sleeplessness, or any of the thousand ills that go hand in hand with civilization, will find quinine useful—more useful as a tonic than any of the myriad drugs that glut the market.

Under ordinary circumstances a two-grain Tabloid is sufficient. In malarial troubles as much as twenty grains should be taken in a day.—"*Health*," London.

TRINIDAD COFFEE.

The Royal Gardens, Kew, to Colonial Office.

Royal Gardens, Kew, April 1889.

Sir,—With reference to my letter of the 7th April, 1888, forwarding a Report on samples of Trinidad Coffee prepared at the Botanic Gardens by Mr. Hart, I am desired by Mr. Thiselton Dyer to inform you that he has recently received further specimens of Trinidad Coffee from Mr. Hart, consisting of Arabian and Liberian sorts in cherry, parchment and cleaned.

2. Mr. Hart has taken considerable interest in promoting a Coffee industry in Trinidad, and in these efforts he has been judiciously supported and encouraged by His Excellency Sir William Robinson.

3. It must be very gratifying to all concerned to find that during the interval since the last samples of Trinidad Coffee were submitted to Loudon Brokers, a considerable improvement has taken place in the preparation and curing of the beans, and there is no reason to doubt that Trinidad Coffee could eventually be established as an article of Commerce on the same footing as Trinidad Cacao.

4. I have pleasure in enclosing a copy of a Report by Messrs. Wilson, Smithett & Co., furnished through Messrs. Shand & Co., on samples of Trinidad Coffee just received from Mr. Hart, and Mr. Thiselton Dyer will be glad if the information contained in it is communicated to Sir William Robinson so that it may be rendered accessible to those who are interested in Coffee growing in Trinidad. I am, &c.,

D. MORRIS.

Description of Samples of Coffee from Trinidad Botanic Gardens.

1. Parchment. Grown in Santa Cruz—Prepared in Gardens.

2. Liberian. Grown in Gardens—Prepared by fermentation.

3. "Creole" *C. Arabica.* Grown and prepared by Machinery in the Gardens.

4. Pea-berry. Picked from above.

5. Parchment Coffee. Grown and prepared in Gardens.

6. Mocha. Grown and prepared in Gardens.

7. "Creole" *C. Arabica.* Grown at Santa Cruz—Prepared in Gardens.

8. Venezuelan Coffee, selling in Trinidad at 20c. per lb. or 83s. 4d. per cwt., retail.

9. Trinidad Coffee. Grown at Santa Cruz—Prepared by fermentation. Dr. Chittenden's.

10. Trinidad Coffee, dried in Cherry. Mr. Fitz Simons, considered fairly good by our Cocoa planters.

11. Montserrat District Coffee. Won 1st prize against all others, San Fernando.

12. Hybrid Mocha. Grown and prepared in Gardens.

Report on Samples of Coffee from Royal Botanic Gardens, Trinidad, By Messrs. Wilson, Smithett & Co., No. 41, Mincing Lane, London, E. C.

1. In parchment of rather dull uneven colour, and this appears to be shewn also in the berry when the outside shell is removed. Considerable importations from various countries have taken place of Coffee in this stage, and a loss of 16 to 20 per cent. takes place in preparing it for market—allowance for which loss is made by Customs. Value about 75s per cwt. as it is, if London cleaned it would realize about 90s per cwt

5. In parchment brighter and apparently better dried. the berries after shelling being also superior to No. 1, 78s per cwt. If London cleaned, about 93s per cwt.

2 Liberian, browner than the usual importations. of Ceylon Liberian. A yellow colour is preferred. The berry is of good size. 78s per cwt.

3. Flat boldish berry of dark colour with a tendency to fading. This is dullish and more nearly approaching some Central American kinds than Ceylon, 90s per cwt.

4. Pea-berry of uneven colour and too much mixed with split and ragged berries to command sale in Eastern Europe, where high prices are paid for even colory pea-berry. We doubt if this prepara-

tion would command a price that would compensate for the separation from the flat berry. Fine pea-berry is worth 110s. 90s per cwt.

6. Of small size, fairly even colour similar to small East India, would command a ready sale probably for admixture with Mocha, the berry being of that character. 92s per cwt.

7. Similar to Ceylon in shape of berry of fairly even colour, but dull and rather faded. 92s per cwt.

8. Pale yellowish and greenish, similar to LaGuayra. 83s per cwt.

9. Dull green pale of undesirable appearance and mixed with brownish berries which seem to have undergone slight decomposition which would make the liquor what is known as "unclean." 75s per cwt.

10. Brown and black berries, apparently over ripe. 60s per cwt.

11. Pale greenish rather uneven in size, similar to Salvador. 85s per cwt.

12. Good hard coated of fine colour and wellgrown. This would command a ready sale both for exportation and for home use, and has much of the character of high grown Mysore or Neilgherry Hills, 98s per cwt.

The liquor of all except Nos. 9 and 10 is good. No. 2 has the coarse African flavour which is never entirely eradicated.

Wilson, Smithett & Co.

Memo. from Superintendent Royal Botanic Gardens to Colonial Secretary.

Sir,—The Coffee samples to which the Secretary of State's communication relates are those which were on Exhibition at the Annual Show of Naparima Agricultural Society.

1. It will be seen that the Hybrid Mocha, as last year, maintains its superiority over all other samples.

2. There is an evident inferiority in all the Coffee prepared by fermentation. No. 1 and No. 9 being the same Coffee and from the same district, but the latter prepared by fermentation (No. 9) and the former by machinery (No. 1.)

3. The advantages of shipping in parchment are shewn with much force.

4. The value of the 1st Prize Coffee at the Naparima Exhibition (San Fernando) is estimated at 85s per cwt., while the value of No. 12 Hybrid Mocha, shewn against it, is given as 98s a difference of 13s per cwt. The decision of the local Judges is therefore reversed. Again, the Creole (No. 9) which took second prize at San Fernando is valued at 5s per cwt, over the Montserrat Coffee which was awarded 1st prize.

This of course shews that the value of the Coffee has been judged by different standards, but which is most reliable, is for growers to judge.

5. "Pea-berry" Coffee generally occurs in all classes of Coffee, and simply arises from the fact that one ovule if fertilized in the flower, instead of two, as is normally the case. The Broker's Report does not appear to favour any attempt to separate these berries from other samples.

6. Our Liberian Coffee is very favourably reported upon, and at the prices quoted, certainly deserves full attention. One important fact in connection with this variety is that the Coffee, after being ripe, will hang on the trees for several months without deterioration, and thus allow the grower to choose his own time for making his harvest.

7. The smaller yield of No. 6 would prevent any idea of its competing with such prolific kinds as No. 12, Hybrid Mocha.

8. The Report should be an inducement to planters to give the industry a fair trial upon the improved lines of culture and preparation.

CINNAMOMUM CASSIA.

With Notes on the Collection of the Bark, from Mr. J. Humphreys.

Mr. J. Humphreys, recently a student of the Society's School of Pharmacy in Bloomsbury Square, on leaving for China a few months since, promised to send for the Museum of the Society the implements used by the Chinese in collecting and trimming cassia bark. Mr. Humphreys has now sent them, and says in the letter accompanying them—

"According to our Chinese manager the mode of collecting the bark is as follows :—

"Transverse cuts are made round the branch or stem, which is only of the size of one complete quill (viz., about an inch in diameter) at distances of about a foot. Then two longitudinal cuts are made right down the stem on each side. This is readily peeled off, and when thoroughly dried presents the appearance of the sample. The chopper-like knife is used for most of the work. The other, a kind of spokeshave, which resembles a plane in its action, is merely to shave off the corky layer or periderm."

He then adds :—

"Our Chinese manager tells me that 'by far the best cinnamon' never gets to Europe and grows wild in a place in Annam. He tells me it differs altogether in appearance from Ceylon cinnamon, being in fact larger than cassia bark. The Chinese pay large sums for it."

I may now point out that until as lately as the year 1884, the exact botanical source of cassia bark was not known with certainty, although it was generally attributed to the tree which is now proved to yield it. The attention of the Colonial Office having been directed to the matter by the authorities at Kew in November, 1881, Mr. Charles Ford, the Superintendent of the Botanical and Afforestation Department at Hong Kong, was sent to the cassia plantations on the West River to procure living and dried specimens of the plant. These he succeeded in obtaining, and on November 16 the result of his investigations was brought before the Linnean Society of London by Mr. W. T. Thiselton Dyer. The information then made public has been already published in this Journal, vol. xiii., p. 584.

Mr. Dyer remarked at that time that although the cultivation of the *Cassia lignea* tree has been carried on in Southern China, it does not appear to be indigenous there. In Cochin China, however, there appears to be some probability of its being wild. He also quotes Mr. Ford's statement to the effect that very thick cassia bark is sometimes obtained from the trees of ten years old and more, which are reserved for producing seeds to supply the places of the small trees, cut down every year, the ordinary trees being cut when six years old.

These statements throw some light upon Mr. Humphrey's remarks concerning the thick cassia bark from Annam, so that it appears probable that the bulk of the thick cassia bark used in China is obtained from wild trees in Cochin China, small supplies only being obtained from the cassia districts in China, when the older seed-bearing trees are cut down for any reason. The exact part of Cochin China where the cassia tree grows wild is mentioned in 'Pharmacographia,' 2nd. ed., p. 320, as follows :—

"The French expedition of Lieutenant Garnier for the exploration of the Mekong and of Cochin China (1866-68) found cassia growing in about N. Lat. 19° in the forests of the valley of the Se Negum, one of the affluents of the left bank of the Mekong, near the frontiers of Annam. A part of this cassia is carried by land into China, while another part is conveyed to Banghok in Siam."

A specimen of the thick cassia bark so highly valued by the Chinese exists in the Hanbury collection of Materia Medica.

There are two other points in connection with cassia to which I may now direct attention.

1. Mr. Dyer remarks in the paper read before the Linnean Society (*Journ. Linn. Soc.* 1884, p. 23) that *Cinnamomum Cassia* is botanically closely allied to *C. obtusifolium*, Nees, one of the species from which a similar product is obtained on the Khasya hills in India There are specimens of the bark of *C. obtusifolium* in the Museum of this Society from the collection of the late India Museum, received from Kew when the distribution of that collection was effected. This bark differs entirely from that of *Cinnamomum Cassia* in its distinctly fibrous character and in the remarkable coriander flavour it possesses, thus adding another to

the many well-known instances in which botanical similarity is dissociated from chemical and structural likeness. It is these curious exceptions that render it so difficult to lay down rules concerning the properties of any one natural order or genus of plants.

The Bark of *Cinnamomum obtusifolium* some years since was met with in the London Market, and there exists in the Museum of the Society a specimen obtained at the time which had been moistened by steam and bleached with the vapour of sulphurous acid, and was then offered for sale as cinnamon.

The coriander taste of this bark is very marked. Now in 'Pharmacographia' (p. 530) the authors allude to a variety of cassia "vera," occasionally found in the London market, which has a flavour more or less of cinnamon, often with some unpleasant addition suggestive of insects of the genus *Cimex*. This seems indicative of similar chemical changes taking place in this bark to those occurring in the coriander plant, the leaves and unripe fruits of which possess a most offensive odour of a cimex character and quite different from the agreeahle fragrance developed in the ripe fruit.

2. I wish to direct the attention of members of our Society and of botanists living in the East to the elucidation of the botanical sources of the several barks so frequently met with in the London market under the names of *Cassia vera* and wild cassia, and which probably come to this country from Batavia, Singapore, Calcutta and Manilla. These barks as a rule contain more mucilage than cassia, the cold infusion made from them giving a thick glairy liquid affording dense ropy precipitates with acetate of lead, but not with alcohol ('Pharmacographia,' 2nd ed., pp. 527, 528, 530).

OIL OF LAVENDER.

With Observations on the Cultivation of the Plant and the distillation of the Oil, by Mr J. C. Cawer.

In the year 1885 I directed attention to the tentative cultivation of lavender and other medicinal plants at Brighton by Mr. J. C. Sawer. He has now presented specimens of the oils distilled from laveuder and rosemary, and thinking that he might possibly be able to add something to the already recorded facts concerning lavender, I asked him for any additional information* that he might be able to afford.

In reply Mr. Sawer says—

"A mild damp winter like the present one does more harm to lavender plants than a hard seasonable frost, as the plants are apt to make greenshoots prematurely, and late frosts nip off these tender portions, each of which would otherwise have produced a flower spike.

"It is necessary to grow the lavender sufficiently far part to allow of ready passage between the rows, as he plants soon spread their brauches, and it is otheraise very difficult, without injuring the plants, to carry the crop of flowers, if required for distillation. The collection has frequently to be done rapidly when the flower is arrived at a certain stage of maturity, and dry weather must be selected for the work. When the plant once begins to flower the blossoms are shed rapidly, and in damp weather the spikes carry much water and loose fragrance.

"Some florists in Sussex cultivate a variety of lavender for 'bunching' (*i.e.*, selling in the streets), and they set the plants close together, and the rows also close together. The plants are not so liable to break or split from the stem, in this case, but it is almost impossible to manure the plants or to collect their blossoms without injury.

"The flowers deprived of as much stalk as possible should be distilled, *without previous maceration*, the same day as cut, and not left in heaps, as the flowers rapidly ferment and the character of the oil is quite changed. The still and copper basket employed for rosemary can be used, but of course the condenser and receiver should be different. The receiver should be deep, as the particles of oil passing into it are much samller than rosemary. If a shallow receiver they might be carried down into the water pipe. The use of the perforated basket is twofold: 1st. It enables the operator to pull out the charge clean, all at once, without 'drawing' the fire, so that the still is ready for a fresh charge. 2nd. It is most important to prevent the flower from scorching by contact with any part of the still. While the basket is being refilled the dirty water is syphoned out and fresh water let in at the same time by a pipe smaller than the syphon, but admitting enough to prevent the copper burning.

"The complement of water is run through the lid of the basket when that has been replaced. The supply of cold water to the condenser must be plentiful, so as to keep the lower half of it always cold. Nearly all the oil will have passed over in half an hour from the time the mass thoroughly commenced to boil; the rest is a heavier oil. The water passing over with the oil should not be returned to the still; the very small quantity of oil saved by doing so would not compensate for the herbaceous flavour communicated to the next running.

"The sample herewith (made as described) is clear, limpid, and pale in colour. It may probably be improved by drying out of it any particles of water held in solution.

"It is said that some consumers add 10 per cent. of S. V. R. to oil which they may have to keep in store, but I find if it be added to *new* oil, in which may remain any traces of water, a peculiar etherification sets in, the odour of which is very unpleasant.

"Mr. Cripps, of Birmingham, has kindly undertaken to examine samples of oil with a view of obtaining analytical data for comparison with other samples of the same oils; as, for instance, the iodine and bromine absorption equivalent, effect of age, etc.

"Of course tests for adulteration are known, also methods of taking the specific gravity, boiling point, etc."

* See Pharm. Journ., [3] xvi., p. 125.

INDIAN DRUGS.

The following specimens have been presented by Dr. W. Dymock, of Bombay, and the information concerning them is taken partly from Dr. Dymock's letter and partly from his work on the 'Materia Medica of Western India.'

Clerodendron infortunatum and C. inerme.—In the leaves of these plants Mr. D. Hooper has detected a bitter principle, and an acid which he identifies with chiratin and ophelic acid. This discovery is the more remarkable, since chirata belongs to the Gentianaceæ, and clerodendron to the Verbenaceæ, these natural orders being very distinct. The leaves of the *Clerodendron infortunatum* are mentioned in the Pharmacopœia of India as an efficient tonic and antiperiodic, and are said to be used as a vermifuge. The leaves are cordate-ovate, 8 to 10 inches long and 7 to 8 inches broad at the base, hairy and dentate at the margin.

Those of *C. inerme* are much smaller, being only 1 to 2 inches long, oval, smooth and dotted on both sides with dark green dots. The leaves of this species are used as a febrifuge in intermittent fevers.

Alangium Lamarkii.—The root of this tree (which belongs to the natural order Cornaceæ) is used in leprosy, syphilis, and skin disease. It possesses emetic, diaphoretic and antipyretic properties, and is, according to Mr. Moodeen Sheriff, a good substitute for Ipecacuanha in all diseases except dysentery.

Casearia esculenta.—The root of this plant is stated by Dr. Dymock to be of great repute in Goa in cases of hepatic disease and hœmorrhoids. Attention has already been directed to the drug in this country in a paper by Dr. Mootooswamy read at the British Pharmaceutical Conference (*Pharm. Journ.*, Nov. 1889, p. 377).

Chloroxylon Swietenia.—The bark possesses astringent properties, but does not appear to be much used in Indian medicine. The tree yields the Satinwood of India.

Kyllingia monocephala.—This little Cyperaceous plant is given as an antidote to poison. It possesses aromatic properties.

Herpestis Monniera.—Dutt states that this plant is considered to be a nervine tonic, and as such is useful in insanity and epilepsy. Ainslie says that it is diuretic and aperient and is serviceable in cases of dysuria accompanied with constipation.

Adiantum lunulatum.—Used by the Mahometans of India as a substitute for the ordinary maidenhair of Europe, and is employed as a deobstruent and resolvent.

Jatropha glandulifera.—The oil of the seeds of this plant is used as an application to ringworm, chronic ulceration, etc. An account of its properties was published in the *Journal de Pharmacie*, [3], xl., p. 16.

Calotropis gigantea.—The flowers of this Asclepiadaceous plant are used in cough, asthma, catarrh and loss of appetite. The bark of the same plant is used as an alterative, and is said to promote the various secretions of the body, and hence to be useful in skin disease, dropsy, etc.

Asafœtida.—The tears sent are stated by Dr. Dymock to be the largest he has ever seen.—*Pharmaceutical Journal.*

REPORT ON THE ROYAL BOTANIC GARDEN, PERADENIYA, NEAR KANDY.

(*By the late Dr. W. C. Ondaatje, Acting Botanical Superintendent, 1st June 1843.*)

(*Continued from page 9.*)

Myristica Officinalis, Linn.—The nutmeg is now covered with flower and fruit, and I have been already able to raise a pretty good number of seedlings (about 180) from the ripe fruits.

The nutmegs are of an excellent flavour.

Caryophyllus Aromaticus, Linn.—Clove trees are likewise growing remarkably well, and are all at this moment in full bearing. A vast number of seedings have been obtained, and there are still a great many available at the Garden.

Amomum Cardamomum, Linn.—Cardamom plants are found here growing since the days of Mr. Moon. The Cardamom they produce is of an excellent quality, and I have no doubt will always find a ready market.

Eugenia Pimenta, D. C.—Allspice succeeds well.

Melaleuca Cajuputi, Roxb. Croton Tiglium, Linn.—Melaleuca Cajuputi, a well known and useful medicinal plant grows remarkably well, and has been introduced into this Garden from the Hon'ble Company's Botanic Garden, Calcutta. Croton Tiglium, Linn., a native of this Island, promises to be of much medicinal use, if only extensively cultivated,

Janipha Manihot, H. B. K.—Janipha Manihot, a plant from which the *Tapioca* is made, thrives well here.

Datura Stramonium, Linn.—Datura Stramonium, (In Singhalese, *Ratta atana, Rata* signifies ,*foreign*) grows in the Garden remarkably well, and I have seen several plants in the neighbourhood of Kandy growing *wild* with much vigour and luxuriance.

Theobroma Cacao, Linn.—The Chocolate plant grows exceedingly well, and with very little care: —Seedlings also of this plant shoot up spontaneously about the Garden; its beans, when prepared like Coffee, make an excellent drink, so that the well chosen name of "food of the gods" by which the illustrious Linnæus has designated it, holds good in the case of our own plants.

Vanilla Aromatica.—The sweet Vanilla is found in Peraderia on some of its noble hills; but I am sorry to state that it does not thrive so well in the Botanic Garden, as in its own locality.

West Indian Yam (Arum Sp.)—"West Indian Yam" grows abundantly in the place, it is excellent in quality and if only known as it ought to be, it will, I think, supersede the potatoe.

Mauritius Sugar Cane, Coffea Arabica, Linn.—It is very easily cultivated. Mauritius Sugar Cane grows well. I merely allude to this as it is a well known fact in this country. Several portions of the Garden are covered with Coffee plants, most of which are now in full bearing, and all applicants are *most liberally* supplied with seedlings.

The Coffee is most excellent in quality and equal to the very best kind.

Sanseviera Zeylanica.—Among plants producing vegetable fibre, the Sanseviera, Zeylanica, Linn. is deserving of particular attention, as it yields a very strong and durable cordage.

Sago and Date Palms.—The Sago and Date Palms grow well here, but as Ceylon is a country which is so remarkable for its fine majestic Palms, I need perhaps hardly notice the circumstance.

Tobacco.—I have recently succeeded in raising seedings from the *Jibelee* and *Rowsa* Tobacco seeds kindly given to me by Dr. Williiam Griffith, the able Superintendent of the Honble Company's Botanic Garden, Calcutta.

3. *The Improvements I have been effecting.*—In the third place I beg leave to call His Excellency's attention to the improvements I have been effecting. One of the first things, to which my attention was called after I had taken charge of the Garden, was the putting in order the cultivated part, which I have almost succeeded in accomplishing.

I am also engaged in collecting chiefly from the jungles, the greatest number of species of inidigenous plants and arranging them, *as far as practicable*, according to the "Natural Order," a system of great importance in every Botanic Garden, but which does not appear to have been generally adopted here.

It would seem however from the regular' arrangements, of some plants, that the late Mr. Moon conducted his operations, to a certain extent, according to the Linnæan system of classification.

One great advantage of *collecting together native plants* will be the opportunity which will thus be afforded of examining and ascertaining, with the greatest facility and precision, their various properties and qualities, and it is perhaps the more necessary to do this, as I have good reasons to believe that this Island contains many plants which may serve the purposes of Commerce, and the Technical Arts, and be used as Mordants, also inMedicine.

Appropriation of a piece of ground as a Medico-Botanic Garden.—Considering the greaty utility of indigenous medicinal plants, and encouraged by certain works recently published at Calcutta and Madras, on the subject of Indian Botany and Materia Medica, I have devoted an extent of 5 acres of land for such plants.

There are not a few drugs of this country that may be substituted for those of Europe, which are costly, difficultly obtained, and very often are found to be inert from having been kept long.

A few instances in proof of this observation may here be adduced. The Hemidesmus Indicus, R. Br. is an excellent substitute for the Sarsaparilla, nay I am bound to say (as I have known its virtue practically) it is even to be preferred to the Sarsaparilla itself. In India this is extensively used with success, and the opinion of the Faculty in Calcutta is much in its favor.* Witness again the bitter tonic,† Cocculus Cordifolius, D. C. In Plumbago Zeylanica, Linn. a plant of this Island, we have a blistering

* By desire of the Medical Board of Bengal, the Hon'ble Company's Dispensary has been supplied with 13½ maunds of the root of the Hemidesmus from the Calcutta Botanic Garden.

Hemidesmus indicus, in Singhalese *Irmus*, in Tamul *Nannare vair*, in Bengalle. *Annote Mul.*

† This may supply the place of the *Quassia.*

agent; add to these the Convolvulus Turpethum, Linn. (Ipomea Turpethum, R. Br.) Croton Tiglium and Hebradendron Gambogioides of Professor Graham, which are useful Cathartic Medicines. Observe likewise the Strychnos Nuxvomica, Linn. a most formidable poison found abundantly in the jungles, but a valuable remedy in paralysis, rheumatism, neuralgia, &c. Many others may here be enumerated; but it is not necessary to do this on the present occasion.

I cannot take leave of this subject without inserting the just remark of the learned Professor Lindley, who observes, "No one will be bold enough to assert that the Physician already possesses the most powerful agents produced by the vegetable kingdom; for every year is bringing some new plant into notice for its energy, while others are excluded because of their inertness. In tropical countries, where a fervid sun, a humid air, and a teeming soil give extraordinary energy to vegetable life, the natives of these regions often recognise the existence of potent herbs, unknown to the European practitioner. We are not altogether to despise the experience of natives less advanced in knowledge than ourselves, or to suppose because they may ascribe imaginary virtues to some of their officinal substances, as has been abundantly done by ourselves in former days, that therefore the remedical properties of their plants are not worth a serious investigation; or that their medical knowledge is beneath our notice, because they are unacquainted with the terms of modern science."

Nursery established.—In order to possess the means of making more liberal distribution of plants, seeds, &c. to applicants, I have commenced, on a small scale, a Nursery, which, I beg to remark, is a very useful accessory to Botanic Gardens in India; for as my honoured Preceptor, the eminently learned Doctor Wallich, has justly remarked "From the absence of the facilities which exist in Europe, the Botanical Gardens in India are obliged to unite in themselves the Offices of Botanist, Gardener, Nurseryman and Seedsman."

Garden divided into Departments.—It thus appears that the Garden at present comprises the three following divisions:—

1.—Plants interesting in a purely *Botanic* view.
2.—*Medicinal* plants, chiefly natives of this country, to ascertain their true medicinial virtues.
3.—A *Nursery*.

With a view of obtaining an ample and faithful collection of plants of this Island, I *intend forming* an *Herbarium*, having duplicate specimens (if possible more) of such plants; which may be eventually disposed of in a manner the most advantageous to Botanical Science.

Measures necessary for the advancement of the Botanic Garden.—I have now in conclusion to suggest a few measures for the advancement of the Garden.

The *first* thing necessary to be done, is *clearing* the extensive portions of ground, which are now overgrown with jungle, and of course perfectly useless for any Botanical or Horticultural purpose, which, it must be evident, will require more laborers than are at present employed, as it would prove but mere fruitless effort to attempt such a work with those I have now in the Garden.

The establishment may however be reduced, as soon as the useless exuberant vegetation in the place is *destroyed*, and the Garden well laid out and duly organized.

I beg also to bring to his Excellency's notice the necessity of employing *two additional men* on the fixed Establishment for the Nursery, whose sole duty it will be to practise Horticultural operations under my superintendence.

In training these men for their work, I shall endeavour to adopt the excellent principles and practice laid down by Professor Lindley in his *able* work on the "Theory of Horticulture," a book which deserves to be more *extensively* known here than it is at present.

An additional *Plant Collector* is likewise highly necessary, I would say indispensable, to make proper collections of, and prepare plants for the Herbarium. There is at present but one plant collector.

The climate of Nuwera Ellia being so much allied to that of the temperate parts of the globe, and the vegetation on and around its hills resembling that found in those parts; I would respectfully suggest to His Excellency the Governor the establishment of a little experimental garden there in order to naturalize the most useful plants of Europe. I have been led to make this suggestion from having been kindly allowed access to Captain Champion's collection of plants made during his little excursions into Nuwera Ellia and Adam's Peak, where I find several plants, natives of a cold climate.

The Receipts of the Garden remitted to the Government Agent for the Central Province, from February to May inclusive, amount to £8 9 $10\frac{1}{8}$, viz:

	£.	s.	d.
February	0	19	0
March	0	11	$0\frac{1}{8}$
April	1	7	10
May	5	12	0
Total	£8	9	$10\frac{1}{8}$

The expenditure of the Garden for the same period amounts to £150 19 $7\frac{1}{2}$, viz:

Fixed Salaries.

	£.	s.	d.
For February	16	4	$10\frac{1}{4}$
,, March	24	14	6
,, April	24	14	6
,, May	23	19	6
Total	£89	13	$4\frac{1}{4}$

Incidental Contingent Salaries.

	£.	s.	d.
For February	8	9	$4\frac{3}{4}$
,, March	15	8	$6\frac{1}{4}$
,, April	17	7	$11\frac{3}{4}$
,, May	20	0	$4\frac{1}{2}$
Total	£61	6	$3\frac{1}{4}$

Amount voted by the Legislative Council for the Botanic Garden, £500 per annum.

Herewith I beg leave to forward an interesting paper entitled "Remarks on the state of Botany in Ceylon with reference to the knowledge of it in April 1843, and an attempt at arranging its Flora, as known to Moon and resident Botanists, according to locality and elevation, commonly called Geographical distribution of a Flora, by Captain Champion, 95th Regiment." (Vide Appendix B.)

WM. C. ONDAATJE,

Actg. Botl. Superintendent.

Royal Botanic Garden,

Peradenia, 1st June 1843.

(*Appendix to be given.*)

THE EURASIAN COLONY IN THE MADRAS PRESIDENCY.

The *Pioneer* writes:—

The President of the Anglo-Indian and Eurasian Association, Mr. Gantz, last year described the Eurasian colonies of Whitefield and Sausmond, the creation of the energy of the late Mr. D. Starkenburgh White as the *magnum opus* of the Association; but it is to be feared that, while they cannot with justice be said to be altogether a failure, they have been far from attaining the success or fulfilling the purpose their founder expected and intended. At the time of the inception of his scheme Mr. White stated that his object was "to settle Eurasians on the soil, to lead them into agricultural pursuits, and to remove for ever the feeling of anxiety as regards their future and that of their children; and again, in 1886, he declared his aim to be "to send the able-bodied destitute, old and young, only as labourers to be fed and paid, leaving it to them to rise by good conduct to the level of settlers: to send persons of slender means to carry on trades of various kinds, giving them each an acre of land: and to send persons of sufficient, yet moderate, means to farm, giving them allotments of land extending to twenty acres." Mr. White's idea, in short, was to found a self-contained community of Eurasians, consisting of three classes, agricultural, industrial and labouring, from which outside competition should be entirely excluded. The vision was fascinating, but like other dreams of idyllic communities it took too little account of the infirmities of the men on whom success depended and on the working of economic law.

What has really happened may be gathered from a very sympathetic description of a visit paid to the colonies last autumn by Lord Connemara, the writer of which is Mr. Rees, who has already given us so many agreeable narratives of a similar sort. The first view of the settlement at Whitefield was not calculated to excite enthusiasm. "It had not," says Mr. Rees, "a very flourishing appearance. Some of the cottages were moderately neat, but in no case had any settler apparently the time or inclination to cultivate the Graces. In the neighbouring town of Bangalore the bungalows and verandahs are generally covered with orange bignonia, violet petræa, various thunbergias and a wealth of convolvulus; but the Whitefield settler has not called them to his aid, and the village has a somewhat bare and unattractive appearance." Nor did personal converse with the settlers themselves serve to prove that the actual condition of the colonists was belied by this uninviting exterior. The oldest settler in the place said his lands had never paid him. He had had some capital and had come there expecting to make a living, but he had hoped for help from the Association which he had never received. The cattle were not strong enough for improved ploughs, and the ground was not good enough for large crops. Very similar was the story of a more recent settler—always the cry for external help: and the most cheerful accounts came from a colonist who did not reside in the village at all. The artisans and the able-bodied destitute, whom Mr. White pictured leading a frugal and contented life among members of their own race, were apparently nowhere to be seen. The only real success had been attained by persons with moderate capital who reared pigs and poultry and cultivated fruit.

From all this there seems to be but one conclusion possible. For the Eurasian pauper or even for the person of slender means Mr. White's scheme has done nothing, and in the nature of things could do nothing, for both classes are beaten at every turn by the native labourer and the native cultivator, and the idea of excluding competition was from the first chimerical. Pensioners, who have accumulated a certain amount of capital are in a rather better position, though even they can hope for success only by leaving the ryot in secure possession of his own ground and turning their attention to fruit-growing, arboriculture, and the like pursuits. In a word Whitefield and Sausmond have given to those who already had; but they have not, as their founder expected they would, provided the less fortunate members of the Eurasian community with a means of livelihood; nor is there any reason to believe that their educational value has been greater, or that the experiment has developed that spirit of energy and self-reliance the lack of which is the worst defect in the Eurasian character. The case, Mr. Rees remarks, is one for kindly criticism and a helping hand; but he is at the same time quite uncertain whether the colonies will reach old age or even adolescence. Is this really to be taken as the *magnum opus* of the Eurasian leaders?

AGRICULTURAL AND INDUSTRIAL ASSOCIATION OF FIJI.

Sugarcane.—The acreage under this product during the past year has been from various causes, considerably reduced. The floods in the early part of last year not only destroyed large areas of cane which would, under ordinary seasons, be now turned into sugar, but deprived the soil of all fertility for some months reducing that which had escaped the floods to a mass of green unripe canes at the time most favourable for cutting and reaping.

On the Ba the returns so far have been satisfactory if report is to be taken as a guide.

Bananas.—This product of the colony not only rivals the former but from a commercial point of view far exceeds it in importance to the colony. Your committee are within the mark when they say in reference to this product of the colony, that but, for its considerable extension, the colony would be in a very much worse condition than it is now. Notwithstanding the exactions levied upon this product from the ships outwards, the area under cultivation has been largely increased. The export value of this product for last year, was about £42,000, and there is no reason why it should not be more than double, and at remunerarative prices to the grower. Care and attention has been latterly bestowed upon the cultivation and selection of fruit for the market and when this has been done the disease has not made much headway. There is as yet no specific for this disease. Baron von Mueller's recommendation is in one or two particulars impracticable: first too expensive; second, of too dangerous a character to be entrusted to irresponsible persons. The other particulars are valueless being too weak to destroy the fungus.

The exports of fruit for 1889 were, Bananas £42,525. Pineapples, about £2,500.

It is said that if the banana plantations of the entire tropical world were utilised as they ought to be, the market would be flooded with a textile material that would quickly influence the value of such rivals as hemp, flax, cotton and jute.

Copra.—For the last year or two nothing but disaster appears to have overtaken this product. Hurricane succeeding hurricane, attended with a very slack market and low prices.

Your committee, however, trust that an immunity from hurricane may be experienced by those depending upon a crop of this product for this year and the next. Prices have lately advanced a little.

Exports 1889, £39,158 12s 4d.

Cotton.—Your committee are of opinion that in cotton cultivation on a small scale remains a profitable experiment, where the climate is suitable. The kidney variety has been grown for the last two years under Government supervision with marked success; and, whilst there is no danger of overdoing or overstocking the market with this article of commerce, they would recommend the planting of an acre or two where the land is available. There is no tangible reason why cotton should not become one of the staple products of the colony; and, through the Planters and Fruit-growers Co-operative Association, the product could be delivered direct to the manufacturer, leaving a very fair margin of profit to the grower. That this latter suggestion is practicable we have evidence in the recent action of the Lancashire manufacturers and operatives in support. Rather than submit to the cotton ring in Liverpool the operatives elected short time and semi-starvation to support their

employers to break down the ring, which tbey ultim' ately did. A revival of the cotton industry is contemplated in Queensland, where the previous failures were similar to those of Fiji, not the actual reduction in prioe of cotton, but the charges of the middleman was the cause of failure in both instances. The wool trade of Australia is undergoing a similar metamorphosis. The continental manufacturers are getting a particular kind of wool direct from South America to escape the London brokers &c. and instead of buying so largely in London now of Australian wools, they send their buyers to Australia. Care, however, should be exercised in the selection of the variety of cotton to be grown, to suit soil and climate.

Export 1889 £787 19s 7d.

TEA.—This article of production still maintains its character of excellence. There has, however, been no addition made to the area under crop. Upon suitable labour supply depends the extension of the area or being able to compete with more favored countries in this respect.

Export 1889 £1,459 1s.

COFFEE.—It is a matter of regret that this article has all but ceased to be produced.

Export nil.

RICE.—Your committee are proud to say that, quite unexpectedly, it has been brought to their notioe that about 20 acres of land is now planted with rice at Rewa, and, when visited by the President, looked vigorous and strong and promising a heavy crop.

FIBRE PLANTS.—It will be interesting to you to known that at last a machine has been invented to decorticate and prepare Ramie fibre for the chemical operation, which appears to be a necessity before the fibre of this plant can be used as a textile fabric. Ramie in the ribbon state is worth about £18 per ton. The author of a paper read before the Franklin Institute says of it "I will call it by no scientifio name; I will simply name it as the richest of all plants, for it possesses wealth of growth, wealth of development and wealth of fibre; in ordinary light ground with a little watering now and then by rain or irrigation, no plant will grow so rapidly, no root will multiply more quickly and produce more stalks, no vegetable fibre is handsomer, richer, or more silky than Ramie." It is a perennial and when once put in the ground it grows for over twenty years without replanting and according to climate gives from two to four crops a year. There are from 10,000 to 16,000 plants in one acre giving in crude fibre dry 1,6000 lb. or 700 lb. bleached fibre per crop, and as there would be three crops at least in Fiji the return per acre would be from £36 to £40.

Your committee regret the matter of paper making fibre, which was taken up by a committee specially appointed, has so far eventuated in nothing, not even in ascertaining the value of the fibres sent home as samples, and they believe that there is a profitable investment for the necessary capital to establish a paper mill in Fiji.

Exports fibre, 1889, £98 13s. 6d.

TOBACCO.—During the past year, tobacco, like maize, had to be imported to supply the demand. There is no country in the world better adapted for the growth of tobacco than this colony and the Associatson should be in a position to introduce an expert to cure the leaf fit for any market in the world, on getting a legal guarantee for a certain area and under conditions of mutual arrangement.

COCOA.—This valuable produot has not as yet asserted for itself that position which it deserves, but it is pleasing to note that one or two have planted out a few trees and in a short time it is hoped that, though in small quantities, it may figure among the exports of the colony.

LABOUR.—This most important question is at the present moment in a more satisfactory condition than for some years past.—*Fiji Times*, April 16th.

RUBBER.—A New York contemporary states that there are more than 120 rubber manufacturers in the United States, employing 15,000 hands, and producing annually 280,000 tons of goods, valued at $200,000,000.—*India Rubber Journal.*

THE FAILURE of the attempt made by the Indian Tea Supply Co., Ld., to popularise tea among tha nativea of India, was probably a foregone conclusion. There is nothing more difficult, says the *Statesman*, than to induce people to consume as food what they have previously been accustomed to regard as medicine; and this is the light in which the people of India, in common with the French and the Italians, have always looked upon tea. Cheap, again, as the lower qualities of tea are, the cost of the beverage, as an article of ordinary diet, would be quite disproportionate to the scale of native expenditure among any but the wealthy.—*M. Mail.*

COOLIES FOR FIJI.—Early in April, 1,100 Indian coolie labourers were expected to arrive at Fiji for the service of the Colonial Sugar Refining Company, and eighty-nine Polynesian labourers have been allotted to them. This certainly looks as though they intended extending their operations in this colony. There is some talk about forming an agricultural department in the local administration, and its advocates declare that it is the only panacea for the present depressed state of affairs. Considering that the Government are now really trying to encourage the introduction of fresh capital and enterprise by offering unoccupied lands for lease, and publishing pamphlets on suitable agricultural products, it can hardly he expected to form in addition an agricultural bureau, at the expense of an additional 2½ per cent *ad valorem* on drapery. —*Indian Agriculturist*, May 10th.

GREEN TEAS IN THE COLOMBO MARKET.—We omitted to call attention to the fine average price realized by Mr. Drmmond Deane for his Kintyre Green teas at the last public sale held in Colombo. The teas were sold by Messrs. E. Benham & Co. and realized the following prices:—

Kintyre—	66 boxes	660 lb.	1c.
	54 boxes	1,080 lb.	[illegible]6c.
	14 ½ chs.	74 lb.	59c.
	25 boxes	532 lb.	49c.
		3.056 lb.	64c. average.

Considering that tbis parcel includes the whole of the bulk, except 2 per cent of dust and 1 per cent of Congou, the average obtained, viz. 64 cents, is very satisfactory, and we take it is higher a good deal than would have been obtained for the same teas manufactured in the ordinary way.

HORTICULTURE IN COSSIPORE.—Babu Hem Chunder Mitter's Practical Institution of Horticulture, Floriculture, and Agriculture at Cossipore is a standing testimony to the enthusiastic pursuit of botany and gardening by a Bengali, and a gratifying instance of natives being trained in a profitable and pleasurable calling through the efforts of one of their own countrymen. The magnificent show of fruits and flowers at Seven Tanks, last February, demonstrated the success of Mr. Mitter's Institution as a nursery where scientific principles are both tested and practised. We now learn from the Annual Report how much quiet work of the most endurable kind is being accomplished at the same institution. Eight native students, undergraduates of the University, were admitted during the year, to be supported and educated free till they know enough to hold responsible positions in public or private gardens, or in connection with zemindari lands. Further, among a number of interesting experiments which were conducted with genuine enterprise, not the least hopeful were those with indigenous fibres. The result of these was to prove the great superiority, in strength and durability, of the fibre of the "Abel Moschus," a hibiscus scientifically known as *Malachra Capitata*, which is common in India in the rainy season.—*Englishman.*

BOMBAY ALOE FIBRE.

The following correspondence given in the *Bombay Gazette* of the 14th instant is of local interest in connection with the recent discussion in our columns. We suppose, it will require tea to fall a little lower, and the labour supply to undergo a very considerable increase, before some practical attention is given by our planters or merchants to the work of developing a trade in superior fibres such as those which are sources of so much profit in Mexico and the Bahamas.

The following correspondence is sent to us for publication:—

Letter from D. Morris, Esq., to J. A. Godley, Esq., C B., India Office, S. W., dated Royal Gardens, Kew, 14th February.

With reference to my letter of the 21st February 1887 and subsequent correspondence on the subject of Bombay aloe fibre, I am desired by Mr. Thiselton Dyer to inform you that the specimens of plants from India, advised in your letter of the 21st ultimo, have been duly received at Kew.

2. These specimens confirm the fact that the Bombay aloe fibre of commerce is prepared from the leaves of Agave vivipara, L., an American species of agave now widely distributed throughout the sub-tropical and tropical parts of the old world, and some parts of India. From the interesting report of the Officiating Director of Land Records and Agriculture (Bombay) we gather that the fibre is extracted by certain depressed castes of natives by crude and destructive methods, and that so far no attempt has been made to cultivate the plants. They are chiefly used as hedge plants and are "nowhere at present in abundance."

3. It is evident, however, that plants exist in Bombay in sufficient quantity to supply several hundred tons of fibre received in this country. After a consideration of the facts noted below it might be found advisable to cultivate this species of agave on waste lands in Bombay entirely for the sake of its fibre; or the Sisal hemp plant (Agave rigida var. Sisalana) might be introduced on a large scale. This latter yields the most valuable fibre of any derived from species of agave, and there is little doubt it would thrive equally well in India. The important fibre industry of Yucatan, created entirely within the last twenty years, is now of the annual value of about three-quarters of a million sterling. India has therefore good grounds for devoting attention to an industry which so far has established itself on a moderate scale in spite of adverse circumstances.

4. In order to test the quality of the fibre produced by Agave vivipara, when cleaned by machines similar to those in use for the preparation of Sisal hemp in Yucatan and the West Indies, a few of the broken leaves, about a foot to two feet long, taken from the larger plant received at Kew, were forwarded to the Death Fibre Machine Company, 147, Leadenhall Street, E. C. A sample of the fibre obtained by passing the leaves through the Death machine is forwarded herewith (marked A); while for purposes of comparison a sample of the ordinary Bombay aloe fibre as it comes into the London market direct from India, is also enclosed (marked B).

5. The great difference in quality and value between these two samples is well given in a report prepared by Messrs. Ide and Christie, a copy of which is herewith attached. The value of the machine-cleaned fibre ranges, according to length, from £25 to £30 per ton. The ordinary Bombay aloo fibre, cleaned by hand, is worth only from £5 to £12 per ton. These figures fully bear out the opinion offered in my letter of the 21st February 1887 that the Bombay aloe fibre industry was capable of being greatly improved. At he present time, there is in stock in this country a thousand tons of Bombay aloe fibre, which prepared roughly by hand will only realize about £8,000, a price that will probably hardly pay expenses. If this fibre had been cleaned by machinery and presented in the condition of the sample marked A, it would realize about £27,000 or more than three times its present value. It appears possible, therefore, without any extension of the present agave plants in Bombay, to increase to a very appreciable extent the returns on the shipment of aloe fibre from that Presidency.

6. Mr. Thiselton Dyer has little doubt that the facts herein stated will prove of considerable interest to the Government of India, and they deserve to be widely known amongst those concerned in the aloe fibre industry.

Letter from Ide and Christie to D. Morris, Esq., M.A., F.L.S., dated 72, Mark Lane, London, E. C., 6th February 1890.

We have your favour of the 4th instant with sample of fibre extracted by Death's process from the leaves of Agave vivipara. This is an excellent fibre, of fair strength, fine colour (which, however, may change somewhat under continued exposure to the air), and were it three times as long, would be worth £30 per ton today in London; if twice as long £27; and as it is, it may be valued at £25.

The ordinary "Bombay aloe" of commerce presents a very different appearance to your specimen, as perhaps samples in your museum may show. Its value, today is—good £12, common £5 per ton.

LABOUR (COOLIE) SUPPLY IN CEYLON:

THE KANGANI AND "COAST ADVANCES" SYSTEM ON CEYLON ESTATS.

Recently, when detailing the system of money and rice advances against monthly wages to coolies employed on estates, and of settlements for two or three months at a time, we alluded to the kangani system as having, equally with the system described, survived all outside objections. We did not then however, enter on the peculiar feature of this kangani system, that of "coast advances." "Coast" in Ceylon parlance means the opposite coast of India, and the "advances" are made primarily to Tamil kanganies to enable them to proceed to the coast of India and inland into the densely peopled districts, to obtain and bring over a force of labourers. By a now settled custom the advance made to the kangani, and for repayment of which he is responsible to the estate owner or superintendent, is R10 for each cooly. By another well established custom this advance of R10 per head has assumed to some degree a perpetual form. That is to say, the kangani of a gang of labourers employed on an estate owes the estate R10 for each of his labourers, while they are correspondingly indebted to the kangani. If there are 500 men, women and children (the latter able to work) employed on an estate, the books of that estate as a rule so general as to admit of few exceptions, will show R5,000 out in "coast advances." All this is simply a matter of custom and agreement, and in the rare cases where coolies cheat a kangani, or a kangani and coolies cheat their employer, there is only the civil remedy available, the labour laws providing no penalties for what they do not recognize. Under certain circumstances such as we heard of recently, the charge of "obtaining money under false pretences" could, we should think, be preferred. The honourable understanding amongst planters is that when a kangani and his gang leave one estate they shall not be engaged for employment on another unless the kangani produces a "tundu," that is a bit of paper from the previous employer stating that anyone paying such previous employer the advances due, the amount being stated, can take on the kangani and his gang. It is, of course, part of the honourable understanding that the previous employer acts *bona fide* and uses all his influence for the transfer intact of the gang to the estate of the person who has given him a cheque for the advances. As a general rule the system works

smoothly, because the vast majority of the planters are honourable men. But there are a few "black sheep" amongst the planting community, and of one of these we lately heard, that after apparently transferring a couple of gangs, whose advances had been repaid to him, he allowed a considerable proportion of the gangs to come back to work on his estate, protecting and encouraging the deserters, instead of assisting the kanganies to recover the lost men and aiding the estate proprietor whose money in repayment of advances he had received. Of course a person thus acting is not recognized as an honourable man, and it seems to us that all such cases should be taken up and publicly dealt with by the District Associations. It will be seen that paying coolies every cent due to them as wages each month tends to make the coast advances more and more risky, and on this subject and that of weeding contracts given to kanganies, as constituting an additional security, our correspondent "1873" writes largely today. His views are worthy of careful attention, but we are sorry to see him give so unfavourable an opinion of the class of labourers of Tamil origin who have been born and brought up in Ceylon and who are included in gangs receiving "coast advances." We had hoped that such coolies would have been amongst the best and most trustworthy labourers on estates, and we feel sure that in many cases old planters have so recognised them.

The system of "weeding contracts" may be briefly explained. In Ceylon, whether coffee, tea, cinchona or cardamoms are cultivated, the keeping of the ground clear of weeds is deemed essential. Gradually a custom has arisen of separating this work from the other operations on an estate, and entrusting it to the various kanganies, who, beside the labour they provide for general purposes of the estate, employ "weeding gangs" on their own account. On the understanding that the section of an estate for which a kangani gets a weeding contract is kept clean, by being weeded, as a rule, once a month, the estate owner pays the kangani a certain monthly rate per acre,—generally R1 per acre per mensem, or R12 per acre per annum. On these contracts the kanganies usually make an appreciable profit, in addition to head money which they receive for coolies in the gangs they provide for the general purposes of the estate. Kanganies will object to go to estates on which weeding contracts are not given out. It is evident, therefore, that the system is generally remunerative to the kanganies, while, so long as full weeding gangs are kept up and the land is kept clean, it saves the superintendent a great deal of trouble. When a weeding contract kangani fails to keep his section in a clean condition, the superintendent puts on a portion of the force at his disposal and charges their wages against the contract rates, paying the kangani only the balance due to him. Our correspondent "1873" indicates that this system of weeding contracts, beside adding to the emoluments of the kanganies, acts as an additional security to the estate owner for coast advances, in proportion to the amount due to the kanganies for weeding contracts which is kept in hand.

To outsiders all this may seem complicated, unscientific and not in accordance with strict law. But "custom," which suits all parties and of the working of which none but defaulters or the dishonest and those who suffer at their hands complain, has, as we stated when discussing the wages advance system, all the binding force of statute law with far more of the equity which is superior to all written law, whatever its penalties and sanctions may be. The fewness of the cases in which the courts have to decide disputes between coolies and their employers, is a strong argument for letting well alone. The cooly is a free agent,—free to come and free to go,—except where he compromises his freedom by going into debt. This the cooly too generally does, borrowing of the kangani, while the kangani borrows from the chetty, high interest being charged in both instances. In this as in other cases of the kind "the borrower is servant to the lender." Some believe, with Sir Arthur Gordon, that a system of full settlement of wages at the end of each month would prevent this great evil. But the vast majority of those who know the people and their idiosyncracies best have no faith in the panacea. We largely share their scepticism, and we look for improvement only to time and education—giving this latter term a much wider meaning than mere schooling. One thing is certain: that no body of labourers in the world are, as a general rule, better treated than those employed on Ceylon estates, it being the interest of the planters as well as their duty to treat the class on whom their own success depends, not only fairly but kindly. Sinhalese labour is useful but not reliable; and if, from any cause, the Tamils of India ceased to seek employment in Ceylon, the vast majority of the estates would have to be abandoned.

TEA PLANTING IN THE NUWARA ELIYA DISTRICT—OVER 6,300 FEET.

(From a Resident Proprietor.)

You asked me to let you know how my yield turned out compared with my estimate. I estimated that I should get 20,000 lb. green leaf between 30th September 1889 and 1st October 1890. I shall exceed that this month considerably, and have 3 months to the good. This year's yield is added to slightly by tipping 5 acres planted in August 1888. But that is very little.

Acreage.	Garden.	Altitude.
12½ in the block	("Elephant Nook.")	6,200 feet
½ for reserve		
13		

Less bungalow and gardens, two large ponds, lines, store, two cattlesheds, pig-sty, &c., say two acres, giving in tea 11 acres.

11 acres planted Attabage *seed at stake*, after came up here in July 1885, has yielded as follows:—

		1889.		1890.
January	...	577	...	1,096
February	...	1,430	...	1,097
March	..	1,130	...	2,766
April	...	1,555	...	2,747
May	...	2,125	...	2,455
June	...	1,266		
July	...	1,645		
August	...	1,721		Pruned (cut across) in August 1888.
September	...	1,683		
October	...	1,710		
November	...	2,160		
December	...	2,038		
		19,040 = 433 lb. made tea per acre.		

The seed at stake was not a great success. Fully 25 per cent were supplied with plants (mostly plants from Abbotsford; seed from Inverness) in 1886. The black grub ate down the shoots time after time; otherwise the seed at stake germinated well.

When planted "seed at stake," it was all in cinchona, and the ground was dibbled not holed for the tea.

COFFEE PLANTING IN THE STRAITS SETTLEMENTS AND IN CEYLON.

An ex-Ceylon planter now travelling in the farther East writes as follows from the Straits :—

"Will you kindly oblige by informing me, whether there is any really good virgin forest-land in Ceylon up-country, in Haputale, or elsewhere, belonging to Governme t or private parties, that would produce *good* coffee if planted to pay, or would it be affected with leaf disease and not come well into bearing ?

"Is it proved that leaf disease exists in the seed or coffee bean ? Leaf disease on Liberian coffee in Johore does not appear to do any harm: the trees appear to winter, and the leaves drop off, but fresh ones come in their place very soon afterwards and the coffee bears very well on very poor sandy soil close by the sea, but as you may know it is a large bulky tree and large cherry with very thick tough skin and the bean not large in proportion.

"From reports tea is not doing so well in Johore as might be expected considering the suitable climate: it does not flush well. Pepper and gambier appear to pay the Chinese well. I trust that tea is doing well in Ceylon."

There are no doubt some select blocks of forest land still left even in our hillcountry, notably one now offering in Haputale, and if our correspondent or his friends mean business, let them send an advertisement with their address, and replies from proprietors or agents are very likely to result. Coffee planting with shade should do in Uva as well as in Dumbara. We are very much puzzled as to how Liberian coffee in Johore can escape injury from leaf disease: our old friend Mr. Turing Mackenzie should tell us all about it. In Ceylon the leaf fungus was so prevalent on Liberian coffee leaves in the lowcountry that it could be spooned off ! It is quite possible as trees grow older they may do better ; but unfortunately most of the Liberian in Ceylon was cleared to make way for tea.

CEYLON UPCOUNTRY PLANTING REPORT.

THE MONSOON AND EARLY PLANTING—COFFEE : GOOD CROPS—CACAO—TEA—COOLIES.

June 5th.

What has come over the monsoon? It is to be hoped it will turn up by-and-by ; meanwhile the times are rather rough on those men who, anxious to get in plants at the very first rains, began to put out a fortnight ago. It seems quite clear that in planting you can rise too early to catch the worm. When travelling the other day I met a man whose only reason for leaving his estate was, that he had started planting, and just wished he had not! He found life pleasanter away from the suffering plants: When a planter tries to be smarter than his fellows, it would seem as if Providence somehow steps in, and keep him humble !

The COFFEE this year is wonderfully healthy, and where it has been at all treated well there is a very fine crop indeed. There is hardly any leaf disease visible, and as for bug you have to look for it. I don't know that I have seen coffee looking so well for ever so long : but then nobody has any faith in its continuing to do so, and it may be covered with fungus and blackened with bug, ere many weeks are past. There have been four or five blossoms, all of which have set well : the last was out about a week ago, and ought to have been washed off by the monsoon, but wasn't.

CACOA still keeps throwing out its wealth of blossom, in a marvelous way, and is healthy and flourishing. The spring crop is coming in, and seems to be rather better than last year. The borer is about as usual, and wants a lot of steady hunting to keep it in its own place. It is a sad plague.

TEA flushes in a moderate way. There is a want of rain. If there was more moisture we would do better.

COOLIES keep coming in, and from some parts of the coast there is a willingness to emigrate owing to the drought, which should be encouraged Advances have shown better results this season than for some seasons back, provided the money has gone to the proper quarter. Where there is the least pinch in any of the recruiting districts of S. India the inhabitants thereof instinctively turn their eyes to Ceylon.

PEPPERCORN.

TOBACCO PLANTING IN DELI.

(*Pinang Gazette*, 23rd and 27th May.)

A fermenting shed at Wamptoe Estate with 100 bales of tobacco has been burned to the ground. As kerosine oil was discovered about the place, the fire is believed to have been the work of incendiaries.

The Committee of management of the Soekaboemi Agricultural Company have petitioned the Netherlands India Government protesting against the recruiting of Javanese coolies for Australia, British North Borneo and the Straits Settlements. They ask the Government not to sanction the exportation of any more coolies to those places, basing their objection on the contents of the Government Directory for 1890, and state that if emigration be allowed to go on they will in a short time be under the necessity of applying for Indian labour, which at present is not allowed by the Indian Government to enter the Dutch Colonies. They therefore suggest the introduction of a law prohibiting the export of coolies from Java for places outside of Netherlands India.

Sumatra tobacco has been sold at Amsterdam at from 162 to 202 guilder cents per half kilo. The next sale will be held on the 3rd proximo, and the result will be known here on the following day.

At the yearly meeting of shareholders of the Amsterdam Deli Company it was resolved to declare a dividend for 1889 of 72½ per cent.

The free immigration of Chinese coolies direct from China has had no favorable results as yet, but what is a great thing is, that the Government have sent a Consul to the south of China, and judging from the ability of the person appointed to that post, a good deal may be expected in future The importation of Indian labour is, however, recommended to the Government with the view of immediate steps being taken in the matter.

THE DISCOVERY OF RUBBER TREES in the great Aruwimi forest by the Stanley expedition is good news to electricians, for the existing supplies have been likely to diminish. In the meantime, an artificial substitute, which, according to Mr. Latimer Clark, F.R.S., promises well, has been brought out, and is to be subjected to searching electrical tests. There are five sorts of this new material—three soft and elastic like cured rubber, and two hard and elastic like wood or ivory. A sixth variety is lighter than water, but is not intended for electrical work. It is stated that the insulating property of the material is higher than that of gutta percha, and nearly equal to that of glass, while the cost is only about 2d per pound. Another advantage is that it burns with difficulty. Its colour is brown, black, or dark blue.—*Globe.*

RICE.

Does long habit develop a hereditary faculty of rice-tasting? Folks in London who use rice to make puddings or to eat with jam and cream, pay from 9s to 12s a cwt for Bengal white rice, while for Japanese they only give from 10s 6d to 11s 6d, according to the quotations of March 8th. Offer Bengal rice to a Japanese, however, and he turns up his nose at it with contempt. Even a common labourer speaks of imported rice as a miserable affair, and if he finds himself unable to purchase the home-grown article, prefers to have recouse to barley. To him foreign rice is insipid and even unpalatable, whereas to outsiders the difference is scarcely perceptible. This is why rice must go almost to famine prices in Japan before any prospect of profit presents itself to importers, and this is doubtless why so much reluctance has been shown by the Exchanges to admit foreign rice into their quotation lists. It appears that even on the Tokyo Exchange, where enlightened views are supposed to prevail preeminently, great difficulties have been raised with reference to foreign rice, the majority of the shareholders being averse to giving it any public recognition. The officials of the Department of Agriculture and Commerce have, however, combated these scruples successfully, and it is now determined that imported rice shall be quoted in the lists, ranking there with the inferior quality of rice known as *imazuri-mai*, and being put at from 2 *yen* to 2·80 *yen* below the Japanese product. Of course something of the reluctance shown by the Exchanges must be attributed to the novelty of the contemplated procedure. Foreign rice, under ordinary circumstances, is a drug in the Japanese market. Nobody wants to eat it, and nobody thinks of dealing in it. Consequently very little is known about the ruling rates, and merchants do not care to touch an article so unfamiliar. The Osaka folks still maintain an attitude of refusal, but as Tokyo has consented to act in the desired sense, its example will doubtless be followed ere long. It is not the price of rice alone that signifies so much, however. The trouble is that nearly all the necessaries of daily life appreciate when rice is dear, so that great hardship results for the lower classes.—*Japan Weekly Mail.*

[This very objection to imported rice long prevailed in Ceylon, and many of the natives object to it to this day. At any rate they prefer the home-grown article. But long years ago the presence here of a vast body of Indian labourers gave imported rice an important position in our commerce which it retains to this day. For imported grain, chiefly rice, Ceylon makes an annual payment to India of about 1½ million sterling.—ED. *T. A.*]

PRECIOUS STONES AT THE ROYAL SOCIETY CONVERSAZIONE.

The Royal Society held the earlier of its two annual *conversaziones* on Wednesday night in the rooms at Burlington-house, and this, one of the great scientific events of the season, was as usual, a brilliant success. * * *

No social function during the present season would be complete without including something connected with Mr. Stanley and his recent expedition; and the Royal Society *conversazione* is no exception. Mr. Henley Grose-Smith was able to show on Wednesday night a selection from the butterflies collected in the great African forests by Mr. William Bonny. Nine of the species collected by Mr. Bonny are new to science, and many of the species are West African. * * *

Professor Judd showed some interesting and beautiful specimens of minerals brought from Ceylon by Mr. C. Barrington Brown; the enormous beryl, between 5lb. and 6lb. in weight, attracted special attention. * * *

An exhibit by Mr. D. Morris, of the Royal Gardens, Kew, was of great practical interest; this was a sugar-cane seed and seedlings. As the result of some experiments with self-sown seedlings, it is anticipated that, by cross fertilization and a careful selection of seedlings, it will now be possible to raise new and improved varieties of sugar cane, and renew the constitutional vigour of plants that have become deteriorated through continuous cultivation by cuttings or slips. Great importance is attached to the subject in sugar-producing countries, as it opens up an entirely new field of investigation in regard to sugar-cane cultivation. Of equal practical interest was Professor Marshall Ward's exhibit of a selection of transparent photographs, showing—(1) the habit, &c., of various trees from different parts of the world; (2) the comparative structure and anatomy of several European timbers; and (3), some of the more prominent features of diseases of wood, &c., and fungi causing them. * * *

Several Egyptian exhibits were very popular. One consisted of three pages of an ancient Egyptian book on medicine, written on papyrus by a scribe named Usertesen Sen, in the 26th or 25th century before Christ. It contains directions for the use of midwives, written in black and red ink, in hieratic characters. A translation was given of one passage on the "Treatment of a woman who is pained in her legs and in all her limbs as one who is beaten. . . . Do thou with regard to her thus: let her eat grease until she is cured." * * *
—London *Times*, May 16th.

THE BONE TRADE OF INDIA.

In the last report on Agricultural operations in the N.-W. Provinces there are some interesting particulars of the bone trade in India:—

The carcases of cattle and other animals, with very rare exceptions are allowed to lie in ravines and waste places and it is the bones of these animals that are exported from the N. W. Provinces. The total number of horses and cattle in the provinces returned for 1888-89 was 23,608,455. Assuming the rate of mortaility per annum at 10 per cent. and the weight of dry bones in a carcass at 20 seers, the total weight of bones which annually becomes available for use amounts to over 40,000 tons.

Mr. Holderness further reports:—The trade in bones, so far as these provinces are concerned, is of a very recent date, it is entirely in the hands of Eurasians and Mahomedans, who send out agents into districts adjoining the line of rail. These employ coolies, generally of the *Chamar* caste, to collect bones for them, and large stocks ready for despatch may often be seen in the neighbourhood of a railway station. The trade is evidently a profitable and growing one, for I have been surprised during a tour recently made through Southern Oudh and the Azamgarh, Jaunpur and Allahabad districts, to see the number of persons engaged in bone-collecting. The town of Phulpur, 17 miles from the nearest railway station, is an instance of the sub-depôts which are spreading over the country. As "bone" does not form a head in the classified list of articles prescribed for registration of rail-bone traffic, the full extent of the traffic is not known. The following figures have been kindly furnished by the Assistant Auditor, East Indian Railway, for the stations on his line in the North-Western Provinces, from which the export of bones in 1888 exceeded 5,000 maunds. Similar statistics for the Oudh and Rohilkhand Railway and other Railway lines within the province was not available.

	Mds.		Mds.
Cawnpore ...	25,944	Sirsaul ...	7,275
Agra ...	20 189	Sirathu ...	6,604
Allahabad ...	89,986	Chola ...	6,372
Hathras ...	85,556	Mohar ...	5,134
Aligarh ...	84,686	Fatehpur ...	5,024

The total value of the bones exported by sea in 1888-89 is given in the note received with the Government

of India's orders quoted above at 17·49 lakhs of rupees, the corresponding weight of which in the monthly returns published by the Government of India is 35,567 tons. The annual statement of the trade and navigation of British India which gives the share contributed by each maritime province has not yet been received by me for 1888-89, so that the quantity exported from the Bengal Presidency in 1888-89 is not known. In previous years the exports from Bengal amounted to one-third of the total exports from India. Assuming that 12,000 tons were exported from Bengal in 1888-89, and that the whole of this quantity was supplied from these provinces, it would still represent only one-third of the total quantity which annually becomes available in those provinces through the normal mortality of horses and cattle. The drain, however, of the export trade on the bone supply of any particular district cannot be measured in this way. The northern districts which border the sub-himalayan forests and are essentially pastoral districts are still imperfectly served by railways, and in them the bone trade does not exist. My inquiries lead to the conclusion that the trade is confined to the central and eastern districts lying along the East Indian and Oudh and Rohilkhand Railways, and that even in these the outlying tracts are rarely visited by the bone collector. The villages within a ten-miles radius of the railway stations mainly furnish the supply, and they are now being completely cleared of all old stores of bones which in former days used to decompose through a series of years near the inhabited sites.

The home collector confines himself to breaking up his spoil with a hammer so as to make it more portable, and no further treatment is usually attempted by the wholesale exporter or the shipper. Occasionally, however, the exporter employs a *dhekli* or stone-mill ordinarily used for grinding lime.

At present bones are not directly used in any form as manure by the native agriculturist. Indirectly, as they decay, a portion of the nitrogen and phosphates of which they are composed finds its way to the soil. But this process of nature is wasteful. Caste and superstition would lead the Indian cultivator to reject bone manures even if he were to be convinced of their utility, and hitherto he has been without the knowledge of or the means of obtaining superphosphates, the ordinary form in which bones are now used for manure by the European agriculturist. The present export trade, therefore is economically defensible, since one portion of the world is thereby enabled to use with care and knowledge in relation to a special system of agriculture what another portion has for centuries allowed to go to waste. Again, as yet it has not been proved that in Indian agriculture bone manures can be profitably employed. A maund of bone dust costs Re. 1, thirty-five maunds or farmyard manure can be bought for this sum. According to the chemists, the 35 maunds of farmyard manure contain four times as much nitrogen as one maund of bone-dust, and nitrogen is the element conspicuously deficient in Indian soils. Experiments with bone-dust and bone superphosphates have been made for a series of years on the Cawnpore Farm with maize and wheat crops. The general result is that, as compared with the standard unmanured plot, there has been a loss on the crop, the cost of the bone manure overbalancing the value of the increased produce. This is especially the case where bone superphosphates are used, owing to the high price of sulphuric acid. Nothing can be inferred from these experiments as to the possible effect of bone-manures, on Indian soils other than the light loams common to the Doab or on special crops. But as regards soils similar to that of the Cawnpore Farm and the great staple crop of wheat, they suggest the conclusion that the Indian ryot, with a rupee to spend on manures, had better lay it out, as at present, on cowdung or indigo refuse than on superphosphates or bone-dust. In England the peculiar value of bone manures has been established in connection with the turnip, mangel-wurzel, and other root-crops. In India we have no turnips (save as a garden crop), and the area under carrots potatoes or other root crops is very limited. The matter is eminently one in which the advice of a really competent chemist, on a full survey of Indian agriculture and a careful analysis of soils, might be most valuable. So much energy and enterprise, European and native are now engaged in the cultivation of indigo, tea, sugar and jute, that such advice would not fall on barren ground.—*Madras Mail*, May 30th.

THE ROMANCE OF TEA SELLING

is surely more conspicuously illustrated in the experiences of Mr. Thomas J. Lipton than in that of any other living man. It seems that a rule of his business life has been since he began to sell in a large way through multiplied agencies, to take up some one article in universal request and make it widely available. We refer to the mother country of course. Only about a year ago, did it strike Mr. Lipton to take up tea, and after so deciding, it was from reading about Ceylon and liking the article, that he made Ceylon tea a speciality. Mr. Lipton has by no means multiplied his tea agencies to the extent he intends: indeed in the Highlands of Scotland he has only lately opened and his forty tea packet stores in and around London have not all been in operation very long. Nevertheless in this, his first year, Mr. Lipton calculates he has sold 4 millions lb. of tea. It is quite possible therefore, that the progress in this department for some time to come may be after a geometrical ratio, especially when America is to be added to Britain as the scene of operations. In the old country, "Lipton's packets" consist of a blend, the preponderating tea being Ceylon, and although he has become the purchaser of Ceylon plantations, Mr. Lipton is not quite certain about entirely giving up the blend. He will, of course, add a packet business in pure Ceylon tea direct from the plantations, no doubt at a higher price than the "blend."

But in the case of America, beginning in a new field altogether, and with the object of winning so many people from a vitiated taste for faced and adulterated China and Japan teas, to the appreciation of a really superior article, Mr. Lipton is quite ready, we understand, to pledge himself to deal only in *pure Ceylon tea.* This is a most important fact; for if this great dealer begins on the principle of spending £15,000 in advertising Ceylon tea—and Ceylon tea only—from Chicago westwards to Denver and San Fransisco, northwards into Canada, east to Philadelphia, and south to New Orleans—he will be doing [more for this Colony in a short space of time than our Tea Fund Committee and the Ceylon-American Company could accomplish probably in a score of years. It becomes a question then whether the Ceylon tea planters should not do all they can to recognise, encourage, and back up Mr. Lipton. He evidently has abundant command of "the sinews of war"—he will want no aid in capital or tea. But it may be a question whether the North-American Continent should not be left entirely to Mr. Lipton's "Ceylon Agencies" and that our Tea Fund Committee should pledge themselves to encourage no competition. The necessary corollary from such a decision would be the winding-up and withdrawal of the Ceylon-American Tea Company, and this could best be arranged we should think by Mr. Lipton taking over the business—the New York. shop, stock, staff and goodwill as they stand? We should think the directors and shareholders would only too gladly enter into such an arrangement, if a proposal were made to them so soon as Mr. Lipton has seen what has been done in New York, and decided on his

own course of operations. Then, finally, it remains to be considered as to whether the Planters' Association or the Tea planters of Ceylon could not give Mr. Lipton such an "official recognition" (if the term may be used) as could be turned to good account in his great campaign to win the people of the States and Canada for Ceylon tea? Could Mr. Lipton be nominated "Commissioner representing the Ceylon Tea Planters in America"? If so, we believe the designation would be acceptable, and very useful in advertising Ceylon tea up and down that country. All these are matters which the Tea Fund Committee may well consider at their meeting on Friday morning, and we commend them to favourable consideration. At the same time there is no occasion for haste. Mr. Lipton, as already announced, leaves by the P. & O. S. S. "Victoria" for Europe tomorrow. After a short interval he crosses to America and his decision about beginning the "tea campaign" will not be taken until he has the reports of his agents in America who have already been instructed to collect information and prepare reports on the proposed new business, against their principal's arrival. No doubt before the end of August, Mr. Lipton will be able to telegraph his decision to Ceylon and it is against that day, that the Tea Committee and the Company's Directors should consider what their course ought to be, in the event, as is likely, of Mr. Lipton undertaking the Ceylon Tea Campaign on a big scale in America.

DAVIDSON'S DOWN-DRAFT SIROCCO.

(BY THE "PERIPATETIC PLANTER.")

Thanks to the data thus obtained, Mr. Davidson has found that theory is borne out by practice in a remarkable manner in several directions. Thus the brokers report these teas *quickly* fried at a *low* temperature (some were pried in only four minutes) 1*d.* to 2*d.* per lb. better in the case of medium grades, and from 4*d.* to 6*d.* per lb. better on the fine qualities, than teas made from the same leaf, at the same time and place in other driers! That confirms the foundation theory, so to speak, of the "Down-draft." Then he has found, as theory led him to expect, that the greater the volume of air passed through the tea in a given time the more rapid the effect upon the leaf; in other words, by increasing the size and speed of his fan, a lower temperature may be used, with a consequent saving in fuel, so far as the fuel used in the stove is concerned. From this it is only a step to the corrollary, if the fan be increased in size and speed, and if the stove be also increased in size, then a further vast increase in *outturn* and improvement in quality are to be expected. Hence, his new large "Down-draft" Sirocco, which is to turn out two maunds per hour. The economy of fuel as shown on the yellow circular referred to, is certainly remarkable. Last, but not least, comes the improvement in the construction of the stove itself. This has been completely reorganised, so far as the manufacture of the parts goes, the principle of beating, &c., being still the same. It would be difficult to describe the changes effected without diagrams; but they certainly appear very radical when explained by diagram, so much so that the life now anticipated by Mr. Davidson, *viz.*, five years, appears quite reasonable. This it will be acknowledged is no trifling advantage in itself. The fan, I might mention in passing has a monthpiece at the exit, so to speak, and it occurred to me, that employers of the Blackman system of withering could easily attach canvas pipe or tube to this, and thus convey the warm air to the withering room, *i. e.*, to the side opposite the Blackman Fans, and be thus able to employ the Blackman system even in houses apart from the tea-house proper; or in the case of upper-stories, convey the warm air to these without loss of heat in transit.—*I. P. Gazette.*

TEA IN THE AZORES.—The coming spring is looked forward to with lively interest by the agricultural classes in the Azores, and will long be remembered as marking a new era in the commercial prosperity of the Island. Tea planting has made such great strides there and the picking of the leaf is expected to be so considerable this season that the pioneer shipment will this year be made to the London market. It is affirmed that Madeira tea will in point of flavour beat the China leaf hollow, which is doubtless owing to the balmy climate of the Azores. It was only a decade ago that the tea plant was first introduced there by Viscount Pazo d'Arcos, then Governor of Macao, who made several shipments of the plant from almost all the tea districts of China. A few years afterwards when Senhor d'Arcos heard that the plant was already acclimatized in the islands, and that there was every reason to suppose that it will thrive, he engaged and sent a few Chinese tea planters to Madeira who taught the natives there how to manipulate the leaf.—*Ceylon Advertiser.*

THE "HAPUTALE" OR "DOWNALL" GROUP OF ESTATES—Dambetenne, Monerakande, and Laymas—has been purchased by Mr. Lipton, we are credibly informed, for £21,000 sterling,—a bargain which seems to take the breath away of not a few authorities who know the very great value attached to these plantations some years ago; and also the large extent of splendid tea now coming on, besides the good coffee remaining, making at least, the Dambetenne and Monerakande estates still very valuable. That Mr. Lipton has made a great bargain is shown by the fact that he was offered £2,000 on his price by a Ceylon planting capitalist before he left Colombo. Indeed, there is a general feeling of surprise at the places selling for £21,000, and it is supposed that if the group had been advertised for sale for some months in Ceylon and in London, at the upset price of £21,000, a considerable advance on that amount could have been obtained. Apart from other advantages, there are scarcely any Uva estates that will be so benefited by the Haputale Railway as this group—a tramway on the level, it is surmised, can be made very cheaply from a new Dambetenne factory to the goods station. The group contain the following areas in cultivation and reserve:—

	Total.	Cultivated.	Tea.	Coffee.	Grass.
Dambetenne ...	771	433*	112	313	8
Monerakande...	1,055	536†	274	242	15
Laymastotte ...	473	336	138	171	27
Total acres ...	2,299	1,305	524	726	50

* With 12,000 cinchona trees.

† 5 acres cinchona.

It will be observed that the price does not make more than £16 per acre for the area in cultivation without counting nearly 800 acres of reserve.—Dambetenne estate has as yet no factory, the leaf of the upper estate so far having been all sold to Pitaratmalie and no tea sales can have appeared under that mark, so that it is difficult to see how a name can have been made for its delicately flavoured tea as a contemporary alleges. The Laymastotte factory—the largest in Haputale—has been working and Mr. Lipton's expert, Mr. Duplock, spoke very favourably of the tea being manufactured there. This factory is on the Laymas road, and it was thought that when completed, it would serve for all the group. But a Dambetenne factory would, as we have said, be very convenient for the railway.

OUT OF SIXTY-NINE COLLERIES now being worked in India it is surprising to find that no fewer than sixty-two are in Bengal. These employ a daily average of 25,000 hands, and supply Calcutta and the railways to the west as far as Lahore. During the ten years ending 1888, the output of Indian coal increased from 229 to 478 lakhs of maunds. During the next ten years the increase will probably be still more rapid. Upper Burmah possesses on the Chindwin river coal measures of great extent and value, and may be expected before long to add considerably to the supply.—*Indian Agriculturist*, May 10th.

TEA FOR NATIVES.—The Indian Tea Supply Company—we are glad to see from the *Pioneer*—at a meeting in Calcutta, decided to continue operations. It is felt that the object of wooing the natives of India to the use of tea is of great importance to the welfare of the industry, and that it is not placed beyond the range of possible achievement. The experiment will be watched with keen interest, and the knowledge that it might have been brought to a premature close may stimulate a feeling of sympathy into active co-operation. It is known that natives will drink tea readily enough; what they object to is the price. Anyone then who wishes to develop their taste can assist very materially by making gifts of tea among his native friends. Only let the taste spread and take root and the money obstacle will soon banish.

THE RAINFALL OF NORTH BORNEO FOR 1889 ranged from 73 inches at the driest station to 141 at the wettest, the figures for the capital, Sandakan, being 101 inches. Dr. Walker in his report stated:—

The rainfall for the year has been on the whole about twenty-five inches below the average of the last eight years. This is explained by the fact that the wet season 1888-89 was early and that of 1889-90 late, so that a smaller proportion than usual of each of the wet seasons fell within the year. The fall of 9.12 inches on 14th February is the second heaviest on record, being exceeded only by the 14th of January 1887 with 14.47: both these falls took place in Sandakan. It may be pointed out that these returns, so far as they go, bear out the remarks made in my report for 1887 as to the way in which the "Intermediate" wet season gets more marked the furthest west we go. In fact in some years the Intermediate wet season on the West Coast gets prolonged so far that it practically becomes continuous with the succeeding true wet season.—*Official Gazette*, May 1st.

MADAGASCAR TIMBER.—Strenuous efforts are being made to introduce timber from Madagascar into the English market. Hitherto the "Great African island" has exported but little in this direction, and most of what has arrived, chiefly smuggled ebony, seems to command good prices. Until quite recently the Malagasy Government prohibited the export of timber from the island, but at length a concession was granted to an Englishman, and a company has been formed to work it. This, the "Madagascar Company, Limited," entertained a large number of timber merchants and others at luncheon at the Cannon street Hotel on Thursday, the 20th instant, Mr. J. W. Shepherd (of Messrs. Seddon & Shepherd) in the chair, to inspect samples of the wood. Amongst those present who referred to the timber resources of the country were Mr. S. Procter (Consul for Madagascar) and Mr. T. Roe, M. P. The principal varieties exhibited were a kind of rosewood, yellow teak, mahogany, and a remarkable species of the last-mentioned called "natte." All were peculiar in being very heavy, and, at the same time not difficult to work. Subsequently the party went to the docks and viewed the materials in bulk. Judging from inquiries already made by merchants, it seems tolerably certain that Madagascar wood will soon become a conspicuous feature in the timber trade.—*Indian Engineer*, May 3rd.

BANGALORE MANGOES.—Col. Mallock, who has settled himself in Mombasa, Africa, has planted in the dark continent a lot of kernels of the mango he took with him from Bombay and Bangalore, which he reported were doing well. But time will shew whether they will flourish there. Six of the best grafted mango plants from Bombay were growing healthily. The cloudy prefers the climate of Mombasa with a "nice breeze all day" to that of Bangalore.—*Spectator.*

THE CANDLE PLANT.—In the Northern and Western parts of Mysore a species of cotton plant grows known to the natives as the *depathi mara* or candle plant. The seed pod is about two or three inches in length and divides in three sections when ripe, each section containing a cluster of seed closely patched with cotton wool. If the narrow end of the section be lighted it will keep aflame for about ten minutes, the seeds giving off a large quantity of oil. The cotton is of no use for spinning, the yield from each pod being extremely small.—*Bangalore Spectator.*

SUGAR CULTIVATION IN TAIPING DISTRICT OF THE STRAITS SETTLEMENTS.—There are 22,414 acres alienated for the purpose of sugar cultivation, distributed as follows:—Krian river 10,781 acres, Kurau 5,379 acres, Gula 6,000 acres, Bagan Tiang 254 acres. Of this land it is estimated that 7,190 acres are this year under cultivation as against 7,120 in the previous year; a slight increase, and a sign that this industry is flourishing. The estates under cultivation consist of 3,745 acres on the Krian river, 2,477 acres in Kurau, 900 acres at Gula, and 68 acres at Bagan Tiang. Estate owners have not found it so difficult to procure labour this year, as will appear from the fact that 1,199 Sinkehs were registered this year as against 561 in 1888.—Official Report, April 1890.

THE SAGO PALM.—The sago palm bears fruit but once. Its load of nuts is its final effort; it has fulfilled its allotted task in the great round of nature, and there remains nothing for it but to die. The nuts become ripe, and are strewn in thousands around the tree, until the fruit-stalk stands up by itself empty and bare. The great branches turn brown and drop one by one to the ground. Inside the trunk the work of decay is going on, until what at one time was a mass of white sago and pith becomes nothing but a collection of rotten brown fibres. One day the trade-wind blows perhaps stronger than usual, and the leafless column of the trunk falls with a crash, destroying in its fall many of the young palms that are already springing from the nuts scattered some months before. —*"A Naturalist among the Head Hunters," by C. M Woodford.*

MR. BARRINGTON BROWN evidently excites a good deal of interest in London with the fine Ceylon stone, a beryl of 4 or 5 lb. weight—a true "oriental emerald"—as well as other specimens which he was able to show at the Conversazione of the Royal Society. On page 36 will be found a brief account of the conversazione, and our London correspondent alludes to the large exhibit. This stone was found not far from Ratnapura and exhibited on velvet in an ebony case, it should make a pretty show. It is rumoured that the stone is likely to be bought for the Emperor of Austria, whose Crown jewels are specially emeralds and who has a London agent no doubt on the watch for any very fine or interesting emerald or beryl. In *Nature* of May 22nd we find the following reference:—

Specimens of minerals brought from Ceylon by C Barrington Brown, exhibited by Prof. J. W. Judd F.R.S. Large perfectly crystallized and clear berly 2050 grammes in weight. The specimen, though water-worn, exhibits the crystalline form. The colour is intermediate between that of emeralds and aquamarines. The specific gravity is 2·703. Fine crystal of yellow corundrum (oriental topaz). Well developed crystals of corundum (sapphires, &c.). Crystal of chrysoberyl from the same district.

CALIFORNIA—WHAT FORTY ACRES WILL PRODUCE.——J. Gardella, writing in the *Oreville Register*, California, says:—I own 40 acres of land about half a mile from Oreville, which is planted in fruit and vegetables. The following is a list of the amount and kind of fruit and vegetables that I grow on it during the year:—On a part of the land I grow two crops potatoes, corn, cabbage etc., and three or four crops of lettuce, radishes, spinach, etc. Vegetables of some kind are growing all the year round, and my peddling waggons run every day in the year with fresh vegetables taken from the garden. I have given under and not above the actual amounts grown on my place. The land is kept well manured, and is irrigated during the summer. Eighty tons peaches; 12 tons apples; pears, 3 tons; apricots, 10 tons; nectarines, 10 tons; plums, 4 tons; blackberries, 10 tons; raspberries, 11 tons; strawbarries, 2½ tons; grapes, 20 tons; quinces, 2½ tons; cherries, 2 tons; figs, 1 ton; potatoes, 30 tons; onions, 25 tons; cabbages, 20 tons; cauliflour, 1½ tons; carrots, 5 tons; parsnips, 5 tons; beets, 3 tons; sweet potatoes, 4 tons; water melons, 100 tons; musk melons, 25 tons; cucumbers, 2½ tons; peas, 3 tons; beans, 4 tons; turnips, 7 tons; rutabagas, 2 tons; green corn, 10 tons; squash and pumpkins, 4 tons; tomatoes, 40 tons; green peppers and okra, ½ ton; lettuce, spinach, radishes, celery, asparagus, and artichokes, 10 tons in all. I have 80 olive trees not yet in bearing, and 500 orange trees, of which a limited number are now in hearing; will have from them this year 5,000 oranges, worth at least 2 cents each on the tree. The fruit and vegetables are sent to the mountains for sale among the people there, and my waggons peddle every day in Oreville. Fourteen men are employed in summer, and seven in winter.—"*Coloniensis*" in *Aberdeen Free Press.*

"A GUIDE TO THE LITERATURE OF SUGAR" being a book of reference for chemists, botanistss, librarians, manufacturers, and planters, with a comprehensive subject-index, by Mr. H. Ling Roth, the author of several works on sugar, has reached us from the publishers, Messrs. Kegan, Paul, Trench, Trübner & Co., Ld., London. From the Introduction we quote as follows:—

The features of the present compilation may be explained as follows:—

1. The titles of important publications are suplemented with brief abstract notes; works the titles of which are misleading or defective (as an indication of their contents) are similarly supplied with notes.

2. By a system of initialling references are given in order to indicate the library or locality in which the book referred to may be found.

3. The Comprehensive Subject-index refers to the notes as well as to the titles.

The work contains more than 1,200 titles of books, pamphlets, and papers relating to sugar. This number might have been considerably augmented had I included handbooks of chemistry, encyclopædias (one title only being excepted), etc. From amongst the numerous narratives of travellers only the more important are given, as works of this class are almost sure to contain some short reference to sugar. With the exception of Burn's Address and MacMahon's Plantership, which are inserted as an example of this class of sugar book, all works dealing with sugar from the slave or anti-slave trade point of view are excluded. There is also a large class of publications, chiefly anonymous pamphlets, which according to the title lead one to believe they refer to sugar, but which on the contrary are merely controversies on free trade and protection; these also I have endeavoured to exclude, but it is not always easy to determine which works have no right to appear in the list and which have. * * * This compilation extends to the beginning of the year 1885. I hope shortly to have ready a supplement bringing the work up to date, and then, if sufficient inducement offer, to bring out an Annual Guide.

We are surprised to find that though our Handbook is entered no mention is made of the *Tropical Agriculturist*.

PEPPER CULTIVATION has been fairly started we learn from the Perak *Government Gazette*,—in the Kuala Kangsa district, Straits Settlements, 195 acres of pepper land having been demarcated. In Larut, pepper cultivation has attracted a good deal of attention, seven lots, representing 5,733 acres, have been alienated for this purpose during the year. The number of applications were very much larger, but a good many were weeded out by requiring the applicants to demarcate or deposit the fees for demarcating the land they applied for.

PROGRESS IN FIJI: TEA AND SUGAR.—Mr. Henry Cave, of the firm of Cave & Co., merchants, Levuka, is now in Dunedin, *en route* to London. He has been a resident of Hevuka for the past 18 years, and during 13 years of that period he had been connected with the Levuka Chamber of Commerce, while for several years he was chairman of it. Mr. Cave, when questioned on the point, said that the tea industry, which had only recently been started, gives every promise of increase. One feature of the industry that made it suitable to the colony was that the plant was so hardly, and in consequence hurricanes did it little or no harm. The young budding leaves were the ones that were picked, and when there was a storm, which would denude the plant of the old leaves, the sun and rain that followed quickly brought out the new sprouts. It was a plant that required plenty of rain, and it got that in the islands. Of the sugar industry Mr. Cave also speaks hopefully. He thinks the progress of the industry has been simply wonderful, and that it will rapidly extend very shortly. The principal producer is the Colonial Sugar Refining Company, of Sydney, who also have a branch in Auckland. That company have large plantations, with irrigation works, on the Rewa and Ba rivers, and is about to occupy another part of Levuka for the same purpose.—*Otago Daily Times*, Apri 121st.

COTTON IN FIJI.—There is a very old friend of Fiji, slighted for many years past, which it would be well for the new generation of planters to know something about—Kidney Cotton. Sea Island Cotton deposed the Kidney twenty years since. Up to that period, planters thrived in Fiji, even on the moist Rewa River, from the proceeds of the growth of this snowy fibre, after paying the comparatively (with what they should be today) heavy charges of ginning, baling and shipping. In an evil hour, kidney cotton was rooted out, and supplanted by sea island, the demand for which is limited, with the result that the same planter who successfully grew kidney, grew poor in the production of sea island—even after capturing the gold medal from Philadelphia Exhibition—the seat of judgment in cotton. Nevertheless, strange to say, it is doubtful if a pod of sea island can be found in Fiji today. Kidney cotton has been grown spasmodically by an odd planter or two, and by the Native Department; but it is now almost on the extinguishing point. Can anyone say why? The drier positions of Fiji should be eminently suited for the production of cotton, and the meteorological conditions of this colony are now fairly well-known. As to whether it will pay to grow is another matter, and it is only fair to assume that the conditions existing in 1870 will hardly suit the conditions of 1890. Will some of the earlier planters of this colony write to the columns of this paper and, for the benefit of the would-be producer, state what they know for or against the production of kidney cotton. That enterprising colony, Ceylon, is just entering largely into the cotton industry; a considerable quantity of seed having been imported from Fiji for the purpose. A Ceylon paper lately stated that by the end of 1890, the production of cotton would be only second to that of tea and coconuts in that colony. The same paper also states that a large cotton spinning factory has been started at Colombo, with a 300-horse-power engine. Not a bad beginning. Australia requires calicoes, and why should not Fiji supply them? Anyway, why should not Fiji grow kidney cotton and make it pay, too.—*Fiji Times.*

PLANT GOOD COTTON SEED.

The intelligent farmer has often noticed in his fields of cotton some plants much larger than others containing a larger number of well-formed bolls, and with fibre whiter, more silky, and better in quality than on any other plant in the field. If he would select from this plant the bolls that are the largest, the finest and most perfectly matured; and, after ginning the cotton, carefully select the seed, rejecting all that are blasted or imperfectly shaped; and then carefully protect them to prevent fermentation or becoming in any manner damaged until the next planting season, the first important step would be taken. There is no chance in this matter, if we follow closely the laws by which nature performs her perfect work. The cotton seeds that have thus been carefully collected from the first plant must be placed in the best prepared soil, under the best conditions, and well cultivated. No cotton of an inferior grade must be planted in the immediate neighbourhood. In fact, it does not pay to cultivate inferior cotton, and it is best to send all such seeds to the oil mills. When blooms of low grade cotton open, insects and winds will soon transport the pollen from them to the pistils of the selected variety, and the germs will become depreciated by such inferior fertilization. There are a number of insects that visit the flowers of the cotton plant for the nectar they contain, and in the effort to reach the base of the flower, where the nectar is found, their bodies become covered with pollen that is transferred to the stigma where they come in contact with pistils of other flowers. It is readily seen therefore, that if plants of an inferior grade are growing and blooming in the immediate neighbourhood of the selected varieties, the insects will soon convey the pollen from the inferior to the superior plant, and the seed that will be produced will contain a germ with qualities of the inferior plant. This work of the insects might explain, to some extent, why it is that improved seeds in a few years degenerate so badly. If the selection of the seed is repeated from year to year, and no inferior cotton planted near enough to vitiate with its pollen by means of insects or wind, and if seasons are favorable, there seems to be no reason why practically perfect plants may not be produced.—*Alabama Experimental Station Bulletin.*

SUGAR FROM COTTONSEED.

The latest reported discovery in connection with cottonseed comes from Germany, where, it is said a process has been discovered for extracting sugar from cotton seed meal. The sugar is of a very superior grade, but cannot be sold in competition with the ordinary article. It is said to be inclined to ferment or sour, and, hence, better in use for preserving fruits. It is said to be fifteen times sweeter than cane sugar, and twenty times more so than sugar made of beets.—*Tradesman.*

TEA AT FOOCHOW.

(From the *Daily Echo.*)

We learn that prices for the new crop are much lower upcountry. Leaf is being offered freely at 9,000 to 12,000 cash per picul.

First crop teas have arrived in large quantities from the different districts, and we understand it is the intention of some of the tea hongs to send their musters out on the 19th instant.

Our readers will no doubt remember that, some time ago, we made mention of the intention of a few upcountry teamen to establish a Tea warehouse at this port in order to enable them to sell their teas *direct* to foreigners. The scheme was not entirely abandoned; but owing to the heavy losses the promoters sustained last year it has remained in abeyance. From what we now learn, this scheme, which by the way has come again under consideration, is to be on the co-operative principle; and, amongst other novelties in the working of it, the services of a foreign tea taster are to be engaged. It is calculated that if this project becomes an accomplished fact, teas will pass into the hands of foreign buyers at a far lower cost. The charges of tea hongs, the commissions to middlemen, and other heavy expenses they have had to meet are said to be enormous, and there would be a saving to the buyers to this extent, or to the greater part of it at least. It is calculated that as much as two millions of dollars were paid, one way and another, to these middlemen every tea season! Though the promoters fully expected that the new scheme will meet with strong opposition at first from the existing old fashioned tea hongs, we see no reason why, under good management, it should not be successful. Foreign merchants will certainly hail any change that is to carry with it a lower cost of tea. The arrangements between the Tea Guild and each firm of merchants with regard to weighing and the general conduct of the trade of the port, as well as the compact between the Tea Guild and the Chamber of Commerce seem to have worked so well that it is difficult at the first blush, to see how this new co-operative society is to work separately to the satisfaction of all concerned. It is true that an independent agreement could be made between this new Society and the merchants and Chamber of Commerce on the same lines as that in force with the Tea Guild. But we are touching on a point not included in the scheme; the promoters intend, we understand, to work quite unbound by any rules or regulations. Whether they will be strong enough to act quite independently and whether such freedom of action would meet the approval of foreign buyers remains to be seen. That the tea hongs have fattened at the expense of the teamen ever since the trade commenced is certain; and it is equally certain that if the services of these middle men could be dispensed with, the cost of tea would to a great extent be lessened.

TEA IN FORMOSA.

Mr. Playfair's report contains some interesting comments on the course and prospects of the tea trade, which has formed so important a feature in Formosan commerce. The inception of tea planting in Formosa was, it is well known, due to the energy of an English merchant, Mr. Dodd, who started the industry in the island. The thing has passed, by inexorable competition, into Chinese hands; but a certain continuance of the good tradition which he inaugurated has maintained for Formosa teas an exceptional character that had secured them so far, against the disasters that have overtaken the trade on the mainland. The export from Tamsui, last year, showed, however, a decrease of 560,000 lb. and the result seems due to the same causes which are so largely responsible for the misfortunes of the China trade.

The teas of the island are, we are told, rapidly losing their distinctive character, owing to the reckless competition amongst Chinese buyers for the Amoy Market, and the careless preparation and fraudulent admixture by them of the teas after they come into their hands from the growers. This has told its tale on the consuming markets, and a lower basis of price than has ever been known before has been established, while the consumption shows a very marked decrease. With the yearly increasing competition from India, Japan, Ceylon, and Java, each of which countries fosters its tea trade, while China does nothing for it, but rather taxes it beyond its endurance, the ground that Formosa has lost on the consuming markets is unlikely ever to be made up; and in the opinion of those most competent to judge, the days of the trade are numbered, unless steps are taken by the Chinese themselves in the direction of radical reform. Under these circumstances it is gratifying to note that his Excellency the Governor has, in conjunction with a foreign merchant, procured the services of an experienced planter from India, who is to establish a model tea farm, and endeavour to show the people the advantages of the proper cultivation

and manufacture of tea. The idea is an enlightened one, but whether it will be prosecuted with vigour, and receive enough official support to ensure its success, remains yet to be seen. It is also an open question whether the adoption of the most perfect methods can be attended with success while the inland and export duties on the article continue to be out of all proportion to its value, and so far in excess of the like imposts in all competing countries.

The paragraph is so pertinent that we have reproduced it at length; though we have left ourselves, in doing so, little space to review various other features in the reports that invite comment.—*L. and C. Express*, May 23rd.

NOTES ON PRODUCE AND FINANCE.

SILVER—TEA—PEPPER—COCOA—COFFEE.

The rise in the price of silver, and effect of American legislation on the value of silver, are events which are keenly watched by those interested in tea. Undoubtedly the depreciation of silver has stimulated the export of Indian produce, and every rise in the price of silver tends to check exports from India. The exporter from India sells what he exports in Europe for gold, and cheap silver means that he gets more rupees when he exchanges his gold. In addition, there is the enhanced cost of production. Tea has benefited considerably by the depreciated rupee, and the rise in its value, should that advance be considerable, will be anything but a matter of congratulation to garden proprietors. They must look for a rise in prices at home and a lowering of freights to compensate them. That which will prove a blessing to the Indian Civil servants is not likely to be regarded as a boon by Indian exporters.

Those who are responsible for the reports and accounts of tea companies must mind what they are about. The *citizen* has its eye on them, and if there is any weak point in the armour of their accounts our contemporary will doubtless discover it. The Balijan Company has not escaped criticism, and even the directors of the Dooars Company are reminded that 'the figures (of the report) are not convincing on the point of the 'far more' value of the estate. The estates comprise, according to official authority, 10,500 acres, and the cost per acre of about a third of this number is no proof of the present value of the whole acreage. If the directors will provide, as they should do, the particulars of the estates generally, in addition to the information they have given in the report, a better opinion could be formed upon the matter. It should also be stated in future reports that the preference shares are entitled to a cumulative dividend and priority in repayment of capital."

Those who find it profitable to adulterate Pepper are fertile in their application of adulterants. The latest is a composition consisting of the following ingredients—namely, rice-starch, chalk, barytes, and lead chromate—which are all reduced to a very fine powder and intimately mixed. The following is suggested as a useful process of treating a suspected sample:—Let a portion be well shaken with chloroform; this will give the mineral ingredients of the adulterant in their natural combination. The residue is well washed and then gently warmed, until every trace of chloroform has evaporated; it is then treated with a few drops of sodium carbonate solution, and allowed to cool. Having separately shaken a little ether with some aqueous hydrogen peroxide, a few drops of the prepared ether are added, and the mixture carefully acidified with hydrochloric acid. A delicate blue colouration will thus be obtained, and the barium and the lead can then be estimated by any of the usual methods.

During the delivery of the Cantor Lectures at the Society of Arts, the lecturer displayed a table showing the variation in the consumption of alcoholic and non-alcoholic drinks and sugar from 1856 to 1888. TEA had jumped from about 65,000,000 to 185,000,000 pounds; coffee had fallen slightly, sugar and cocoa showed almost a parallel rise, each faster than that of the population; spirits and wine rose rapidly until 1873, and beer until about 1875, since which time they had as steadily declined.

In 1873 the British East Indies sent us 20,326,882 lb. of tea; in 1889, 127,160,409 lb.; China meanwhile had fallen from 133,307,196 lb. to 88,848,574 lb. Our total imports were 162,344,395 lb. in 1873, rising steadily to 221,602,660 lb. in 1889. Corresponding figures for consumption showed 132,022,155 lb. in 1873, or 4·1 lb. per head; in 1889, 185,621,800 lb., or 4·9 lb. per head. In the Australian Colonies 7·66 lb. per head were consumed in 1884 5; in Spain, ·01 lb. A large and varied assortment of teas—including brick tea—was on view.

In his lecture on "COCOA" before the Society of Arts, Mr. Bannister said there was great difficulty in understanding how the name *cacao* had become changed into cocoa. Linnæus was so much struck by its properties that he regarded it as fit drink for the gods, hence naming it Theobroma Cacao. When Cortes visited Mexico, he found the cocoa beans being used as money, and one writer of his time remarked that it was better to have such money than silver and gold, for no one could possibly hoard it up, as it would not keep. The Emperor of Mexico received it as a tribute from various parts of the country, and he was said to have had no less than fifty pitchers prepared for his own use daily, so that, however small the pitchers were, he must have had great taste for it. The consumption in Mexico was very large, and it was said that about 2,444,000 cwt. were used, which must, however, have been an exaggeration. In 1806 from six to nine million pounds were used in Spain, and from fourteen to seventeen millions in the rest of Europe. In 1662 it was sold in London at 2s per lb. Clubs, where it was largely used, were formed, one of which was the Cocoa Tree Club in St. James's. These clubs became divided into Whig and Tory ones, and eventually deteriorated into gambling clubs and places of resort where the drinks were no longer of the non-intoxicating kind. There was a large proportion of fat in cocoa, the Trinidad variety possessing as much as 51·77 per cent. This was taken objection to, and starch and sugar was added to let down the quantity. The cocoa plant belonged to a very strange class of plants. The leaves grew at the ends of the branches, and the pod, or fruit, hung from the thick stem or trunk of the tree, and it was no uncommon thing to see ripe pods and flowers on the same stalk. The pod contained from thirty-five to forty seeds, enveloped in a soft pulp, which was often used by the natives as food. The process of fermentation to which the fresh. gathered seeds were submitted was of great importance, as it not only removed the slimy substance surrounding the seeds, but it also tended to remove much of the bitterness of the seeds themselves. On reaching this country the seeds were roasted and the husk removed, leaving what was known as cocoa-nibs.

When cocoa was first introduced there was much difficulty in preparing it for drinking, owing to the thinness of the liquor and the amount of fat which rose to the top. Then some clever person thought of adding starch, which had the property of holding the cocoa in suspension, and so giving more body to the liquor. The next point which arose was how to make a cocoa free from starch and sugar, and yet t be soluble. They found that it was necessary to remove a considerable amount of the fat, which was done by grinding it in a warm mill, which caused the fat to melt, so as to be extractable by pressure, so that the percentage of fat was reduced to from 23·38 to 29 60. Flake cocoa, cocoa extract, chocolatine, and the nibs themselves contained starch or sugar; while the Iceland moss cocoa, of all prepared cocoas, contained most, as there was only 23·74 of non-fatty cocoa present. Chocolat de santé contained 2 per cent. of starch, 61·21 of sugar, and 13·27 of cocoa. A further step in the manufacture of cocoa was the addition of alkalis, such as ammonia or potash, by which it was rendered soluble. The drink prepared from cocoa was a bland and wholesome drink, and there was a chance of its taking its position among the non-alcoholic drinks. When made into a sweetmeat it was far preferable to an inordinate use of sugar, and such a use was to be encouraged rather than condemned, as it nourished rather than

fattened, and was more wholesome than sweets. Passing on to deal with chocolate, the lecturer said that the derivation of the word was difficult to trace and the only suggestion that seemed to be at all valuable was to the effect that when the Mexicans ground the cocoa up with starch and sugar for the purpose of making chocolate, the pestle made a peculiar noise in the mortar which they tried to imitate in their speech by the word "chocolate." The chocolate which was supplied to the Navy contained 80 per cent of cocoa and 20 per cent of pure Demerara sugar. Chocolate creams were made of sugar and glucose spread over with a paste of chocolate—a process which was mostly done by hand. The quantity of cocoa imported into this country in 1873 was 19,661,247 lb., and the consumption was 8,311,023 lb. or 26 lh. per head. In 1883 the three quantities had risen to 22,632,694 lb., 12,868,170 lb., and 36 lb.; and in 1889 the quantities were 26,735,974 lb., 18,464,164 lb. and 48 lb.

In his lecture on COFFEE Mr. Bannister said that the chemistry of coffee was particularly interesting as affording a comparison of the beverage with tea. The almost entire absence of tannin fitted it admirably for after-dinner use. The presence also of fatty and oily substances rendered it to some extent a true food, while the alkaloid-caffeine C_8, H_{10}, N_4, O_2—performed the function of a nerve tonic of the greatest value. Coffee, when properly roasted, did not suffer much loss of the most valuable constituents; the amount of caffeine usually present in raw coffee was about 1-1·3 per cent. and in roasted hardly less; in an ordinary infusion, 3 fluid ounces were reckoned to contain nearly 2·5 grains of caffeine. Naturally, the roasting of coffee was an operation requiring great skill and judgment. A good roaster must understand the peculiarities of the different kinds of coffee: some were tough and more moist than others. The perfectly roasted berry was of a rich chestnut colour, it had lost its toughness and become crisp, so that it readily disintegrated in the mill, and at the same time it had not that dark brown tint, which meant that it was over-roasted. However good the quality of the original coffee, over-roasting spoiled it. It might give a darker liquor, but it possessed little or no aroma, and had destroyed the natural constituents which make up the quality of good coffee. When properly roasted it lost 16 to 18 per cent. of its weight, mostly moisture, but in addition the constituents of the berry had been modified, and an aromatic oil was produced which had an intense flavour. A judicious blend of different kinds of coffee always produced a better liquor than any single coffee, but this mixture should always be made after roasting. The cooling of the roasted berry was also a very delicate operation.

The steady falling off in the consumption of coffee proved beyond doubt that coffee was not a popular drink, one reason, perhaps, being that its preparation for the table was more complicated than that of its rival—tea. Thus in 1873 we consumed 288,669 cwts., or 1.01lb. per head; in 1889 this had fallen to 259,279 cwt., or ·76lb. per head. The total imports fell in the same period from 6,183,678 cwt. to 1,040,606 cwt.

A French professor claims that he has almost succeeded in producing artificial silk, which should render us independent of the silkworm. He says all the constituent materials of silk are to be found in the mulberry-leaf, upon which the silkworm feeds.

THE MERCHANDISE MARKS ACT:—CEYLON TEA.

In a few months' time we are promised a wave of litigation under the Merchandise Marks Act, more especially in connection with the adulteration of the three breakfast table beverages of tea, coffee, and cocoa. But a short time back, one offender was fined the small sum of £10 for selling "Sogama" tea. The inside of the packets containing the so-called Sogama tea was in reality a mixture of cheap Indian and China teas. This, at all events, was the opinion of Mr. W. J. Thompson, whose experience has extended over thirty years. Mr. Avory, for the defence, denied that Messrs. Paget and Pigott, tea dealers, of 36, Middlesex-street, Whitechapel, had any intention to defraud. The tea was sold in packets bearing the brand of "The Sogama Estate." The Ceylon Association having ascertained that tea, bearing falsely the brand of the Sogama Estate, was being sold by certain persons, communicated with the company owning the estate, and the proceedings naturally followed. Some mention was incidentally made of a Sogama "District." To anyone connected with the planting enterprise of Ceylon such a theory is peculiarly, not to say amusingly, absurd. The names of the districts in Ceylon are naturally in the Singalese language, whereas Sogama is clearly a Tamil word meaning "quite well," from *sogham*, health. We have known the estate for the past ten years, together with the entire district of Pussellawa, in which it is situated, and feel perfectly sure that its tea fully deserves the good price which is paid for it in the Lane. Mr. Bushby, in giving judgment, said the label "Sogama Estate" too distinctly misled the public, and that it was a serious evil which must be put a stop to. He imposed a fine of £10 and allowed 25s costs.

Now, this case is merely to be the forerunner of a dozen similar ones. For the protection of British-grown tea, the Ceylon Association in London intend to commence actions against other manufacturers of choice blends and mixtures, many of which are conspicuously labelled "pure Ceylon tea." That which we particularly desire to ask those of the public who may find themselves called as jurors in any of these cases is whether or not such an expression as "principally pure Ceylon tea" is or is not an actual contradiction in terms. To us it gives the most perfect example of oxymoron that the English can present, and would, we are sure, have been used by Mr. Lindley Murray in his grammar had he lived at the present day. No mention need be made of the fact that the word "principally" is printed in small letters in order to give that deceptive complexion to the label which is so profitable to the tea dealer and so disastrous to the palate and pocket of the small and ignorant consumer. Can we talk of diluted neat brandy, of alloyed virgin gold? We, indeed, hear of real paste diamonds and of real mock-turtle soup, but believe no harm is done by these terms; but the coupling of two such word as principally pure is, to our mind, wilfully misleading, besides being nonsensical. Surely "pure Ceylon tea" cannot be guarded in any way. If it is pure, then, what is the use of the word "principally"? If it is not pure, the word is nothing more or less than a lie.

As the law now stands, tea dealers can drive a coach-and-four right through it in every direction. The subtle alteration of a single letter can be made with impunity, with the effect of giving the public the idea that they are buying tea from the advertisers at fully 6d. a pound reduction on the price charged by other shops. So far, indeed, is this carried that if only the public were not, as Carlyle averred, "mostly fools," they would see that the tea offered them must be sold at an average loss of about 3d. a pound to the advertisers. "Sogama Estate" tea is only one example of the many frauds that are printed. As we have said, the usual plan is to seize upon the name of a well-known district or estate, such as Kaltura or Mariawattie, and to alter one or two letters. A large label is then affixed, with the false word well displayed, and guarded by a small-typed "principally" or "blend." The *mala fides* of this is so apparent that any judge on the bench or any twelve men in the jury box would be bound to give a verdict against the advertisers. Mr. Goschen, in his Budget speech, advised the poorer tea consummers to exercise more care with regard to the tea they bought. But he omitted to tell them how to set about doing so. Like Dr. Johnson, he can find them facts, but he cannot find them intelligence. When anyone sees the word "pure" printed in large letters on a packet, we think he should be able to obtain redress in a court of justice as soon as it is owned that the contents are not pure, or, in other words, are pure adulterations. We have in this office six different packets of so-called "Ceylon tea," the labels on all of which are, in our opinion, gross frauds on the public. They have been carefully prepared

under the eye of an unscrupulous solicitor, no doubt in order to fit well into the joints in the harness of the Merchandise Marks Act. The sooner this Act is enclosed in a new suit of armour the better for the public, and we will heartily coöperate with any association which has so meritorious an end in view. —London *Citizen,* May 20th.

SOME STRANGE AMERICAN TRADES.

Nobody can travel long in America without noticing the sign-plates of many curious occupations. Artificial ear-makers, nose-restorers, leg-stretchers, sermon-writers, prayer-makers, child-adopters, salad-mixers, lamp-attendants were among the various businesses brought to my notice during a three-hours' walk this morning up town (writes a contributor to *Galignani*), by burnished brass signs on door lamps or bold lettering across the fronts of houses.

The artificial ear, nose and cheek-restorer came into existence shortly after the close of the Civil War. The disfiguring wounds of many soldiers taxed the ingenuity of the medical profession, and it was not long before advertisements in the public papers announced that Dr. So-and-So was able to repair all ravages by sword and shot. Many an old soldier with his nose shot away by a bullet, or cleft in half by a sword, willingly welcomed these announcements, and it is said that in the first few years after the war the spectacle of a man with a wax nose attached to a pair of green eye-glasses, was so common that it was hardly noticed. In the present day, however, a man's nose can be duplicated without the artificial attachment to his face being detected except on the closest scrutiny. I was talking to a gentleman whom I met in the office of an artificial ear-maker on this very topic. He was a man with a singularly sweet voice and a heavy black moustache beneath his delicately chiselled nose. "You are right," said he, "in saying that science has learned how to become almost a twin-brother to nature. Do you notice anything peculiar about my face?" I confessed that I did not, and he laughed as he said, "look here." He then put his finger in his mouth and touched something in his upper palate. The next moment his nose fell into his hand, a false palate dropped out of his mouth, and there he stood speechless and horribly hideous, with a deep hole in his face where his nose should be. The next moment he pushed the nose back ; it was made with a shaft stretching into the skull. Then he put back the palate and fastened a small bolt connected with the nose-shaft, and again he was as good-looking a man as you could find in all New York. "You look amused," said he ; "but I assure you that until my doctor succeeded in making me presentable I was not only the frightful sight you just saw, but, although I can speak six languages, I could not make myself intelligible in a single one. At the Battle of Cedar Mountain a ball went through my nose and upper palate, destroying both." Soldiers are not the only people who go to the feature-restorers for help when disfigured. Thin women succeed in having made cunningly contrived paps for their cheeks, and persons with hare-lips sometimes have the whole of the lip cut away and a false one substituted.

Ear-makers confine themselves to their own speciality. Ears are frequently lost in America in personal fisticuffs, for there is nothing your American enjoys more than a good chew at the ear of an antagonist, not to speak of the chance to slash it off with a bowie knife or a razor. Ears are also frequently lost through frost-bite. The restorer models them cleverly out of plaster of Paris, taking the remaining ear as a copy, then makes them from a composition of wax, India-rubber, and a peculiar sort of gum, and affixes them by rubber suction to the side of the head. A family living in Illinois, which happened to be blown up on account of incautiously residing in the vicinity of a powder magazine, has only three noses and two ears between its members ; nor has any member of the family, which consists of parents, three good-looking girls, and two strapping young fellows, more than one eye. Nobody would suspect any of these defects at a general glance, for the ear-maker, the nose-restorer, and the glass-eye manufacturer worked over the scorched and badly shaken family for weeks after the doctor had finished treating them for their burns.

There is a dentist on Broadway who calls himself a "tooth transplanter." This gentleman's occupation is as ingenious as it is romantic. A pair of lovers will go to him who are about to be separated for some time. Side by side they sit with open mouths in the surgery while he draws out a small and sound molar from the young man's jaw, and then immediately draws out the largest and soundest from the young lady's. The dentist then quickly inserts the feminine tooth in the masculine gum and the masculine tooth in the feminine gum, and in a day or so the two teeth are fixed as comfortably in their foster mouths as though they had grown there always. The tooth transplanter's charges are a a little high, and sometimes he is called upon to undo his own work. He told me an amusing story. Last October a fine dashing young fellow about to join his cavalry regiment on the frontier, came with his sweetheart, a lovely little blonde, and requested to have their teeth transplanted. The job did not take long, although there was some little difficulty in drawing a tooth sufficiently small out of the officer's mouth to fit the girl's gum, and she suffered no little pain during the operation. She could not be induced to take ether as she said it would spoil the romance. In February the young lady came again, but alone and in tears. "She rushed at me," relates the dentist, "crying 'Take it out, take it out ; he is a wretch and has deceived me.' I recalled her face readily, but I insisted on hearing her story before removing her sweetheart's transplanted tooth. And I was quite moved," continued the dentist, "by her recital of the infamous manner in which her cavalry lover had suddenly ceased corresponding with her and deliberately married the rich widow of an intemperate Lieutenant-Colonel. I took out that tooth, and advised her to write to her recalcitrant lover and insist upon her own tooth being restored to her. I hope he was well wrenched in the operation."

Leg-stretchers are men and women who fix their patients in a species of rack for an hour or two a-day and chafe the arms and limbs with weak whisky-and-water. Six months of this treatment will ensure an extra inch or two of height ; but the operation is tedious and painful. Short men engaged to tall girls are the best-paying customers for this business. —*Pioneer.*

THE SILVER INDUSTRY.

[BY JOHN RICHARDS.]

During the last four years this new industry has made most marvellous progress, and may now be classed as one of Australia's chief sources of wealth. Its rapid and profitable development has lifted hundreds from comparative poverty to affluence, and has enabled thousands of miners, smelters, and labourers to earn a comfortable livelihood, besides

benefiting indirectly more or less all classes of the community. It is quite on the cards, judging from past progress, that in less than twenty years the output of silver will exceed in value any one of our long established staple products. This year I estimate that about three and a half millions sterling worth of silver and lead will be exported. A question of vital importance to all, but more especially to the silverminer and wheatgrower is. Will the metal maintain its price? It may be asked, how can the price of silver affect the Australian wheatgrower? That it does affect him will be presently shown. During the last few months silver has had a most remarkable rise. For about two years prior to the late advance the average price was a little over 3s 6d per oz. A few weeks ago it touched 4s, the present quotation being 3s 10½d. The main cause of the rise is no doubt the Bill introduced in the Senate and House of Representatives of the United States in February last, which virtually provides for the free coinage of all the silver (about half the total product of the world) produced in that country. Another cause is Mr. Goschen's proposal to abolish the heavy duty in Great Britain on silver plate, which will undoubtedly, owing to the beauty and durability of the metal, bring it into more general use. One of the principal reasons given for introducing this Silver Bill is the growing scarcity of gold, which means dear money, and that the expansion of trade and rapid increase of the world's population requires a much larger metallic currency. The United States has 426 millions of dollars (over £85,000,000) of paper money commonly called uncovered notes, behind which there is no gold or silver or bullion.

Now I will try to explain how cheap silver keeps down the price of wheat, the great staple export of this colony. The European market for foreign wheat is supplied chiefly from the United States, India, Russia, Argentine Republic, and Australia. Before the demonetization of silver in Europe in 1873 the value of the rupee there was two shillings in gold, six months ago it was only worth 1s 4d, but in a silver standard country like India the rupee lost none of its purchasing power owing to the adoption of the gold standard by the principal commercial nations of the world. India sends to Europe one million tons of wheat yearly. A person who wishes to obtain wheat in India can procure enough silver to make two rupees for 2s 8d; with it he can buy a bushel of wheat in India to sell in the English market in competition with the Australian farmer who must sell his wheat for the equivalent of two rupees in silver, or, what is the same thing, 2s 8d a bushel in gold. Silver being the only legal tender in India the Indian wheat-producers have experienced no material change in the price. In a late *New York Tribune* Senator Stewart writes—"The silver standard countries have ample resources to supply the European markets with all farm products. Why is it that all the silver standard countries continue to increase their exports of farm products, while the gold standard countries are compelled to surrender the markets of Europe which they have so long enjoyed. In 1880 the United States furnished 60 per cent. of the quantity supplied; in 1888-9 our country sent less than 23 per cent. The Australian Colonies are on the gold basis, and suffer equally with the United States. These colonies in 1880 sold in the European markets over 13,000,000 bushels of wheat, while in 1888-9 their contribution was reduced to 4,500,000."

Australia being the only silver-producing country of any importance in the British Empire, and, barring the United States and Mexico, producing more silver than any other country in the world, she has a perfect right to make her voice heard in the great bimetallic controversy that is now agitating England, the Continental nations, and America. Australia should use every effort to induce England to return to her old bimetallic currency, which would make silver a legal tender for any amount. The recent rise in the price of silver is mainly owing to wise legislation, and Australia, so far as possible, should follow in the wake of America. A rise of only 4d an ounce means an extra profit to one Australian mine alone of £2,500 a week, or the dividends increased by £130,000 a year. This 4d an ounce may also mean the difference between struggling Companies making a call or meeting expenses. It may be argued that an advance in silver and increased dividends only add to the wealth of the lucky shareholders, but a good proportion of this increased wealth is bound to circulate in one form or another. The higher the price we get for any of our staple exports the better for all classes. The mine-owner cannot enrich himself without enriching others. His wealth is taken from the ground and by his enterprise the country at large is made richer and no individual is made poorer. Very different to the man who speculates for a rise in sugar or wheat. His gain is another man's loss. Again, it may be said that if a high price for silver means a higher price for wheat, would that not be rather rough on the people of wheat-importing countries, such as England? No doubt it would; but, as a rule, nations like individuals generally act from purely selfish motives. The paramount duty of the legislators of any country is to strive to increase the prosperity of that country. And if this desirable result is accomplished how such legislation affects other nations is a matter of very secondary importance.—*Adelaide Observer*, May 10th.

PLANTING IN NETHERLANDS INDIA:

Java Tea, Bantam Pepper, Sugar.

The present low quotations for Java tea have stirred up the planters there to put their house in order. The fall in prices has long been in operation and, all through last year, the situation remained unchanged. The planters, taking the alarm, set to work growing the Assam variety of tea in preference, and introduced sundry improvements in machinery and appliances. The fall in Java tea, properly so called, arises somewhat from quality being sacrificed to quantity, but growers' profits have been materially reduced even for superior kinds by the low rates offered by retail tea dealers in Europe. To remedy this, the planters have taken steps to start retail tea dealing on their own account, and they have also set about increasing the sale of the article in the island itself.

In Bantam, pepper cultivation, formerly a leading industry, has fallen off considerably through suitable land for carrying it on abounds. The people migrate elsewhere to work as labourers on pepper estates but shrink from growing it themselves, owing to difficulties attending the transport of cuttings and the mode of planting them out, which requires a particular kind of timber for poles hard to get. To meet the difficulty the Government has decided upon starting an experimental pepper garden there, which will also contain trees suitable for poles.

The Botanical Garden at Buitenzorg affords a striking instance of how Nature sometimes mocks at theoretical science. Scientists there put out by the canker attacking the sugar canes in Java, determined to experiment upon it by planting in an enclosed piece of land sound canes and stricken ones in alternate rows to find out how the disease spreads and its mode of attack. The plants were left to themselves until the day of examination, when the scientists found, to their amazement, that the diseased cane had not infected the sound ones, and that just the opposite had taken place by all

the sickly cane becoming healthy. Meanwhile the planters set great store by plant cane from abroad, and the Governor-General has been empowered to authorise its importation in vessels flying foreign flags.

The *sirih* or betel leaf, so much in demand among natives for chewing purposes, has been found on analysis in Europe to contain useful medical properties. The leaves produce a kind of oil which yields an active principle going by the name of *Chavicol.* Experimenting with the latter in a laboratory at Amsterdam has shown that Chavicol is a powerful antiseptic against bacteria, and is five times stronger than Phenol.—*Straits Times,* May 28th.

REMARKS ON THE STATE OF BOTANY IN CEYLON,

WITH REFERENCE TO THE KNOWLEDGE OF IT IN APRIL 1843, AND AN ATTEMPT AT ARRANGING ITS FLORA AS KNOWN TO MOON AND RESIDENT BOTANISTS ACCORDING TO LOCALITY AND ELEVATION, COMMONLY CALLED GEOGRAPHICAL DISTRIBUTION OF A FLORA.

By CAPTAIN CHAMPION, 95TH REGT.*

On first arrival in Ceylon our Botanical griffin will feel very fairly puzzled as to what he is to regard as new and interesting in the vast mass of green jungle stretched before his wondering eyes. It may be that he can distinguish a Cocoo Palm from a Jack tree at first sight, and if he has common intelligence he will shortly become acquainted with the mysteries of eating the various fruits served on the dessert table, and perhaps even enquire after tho trees upon which they are produced, in which case I would recommend his consulting his black Appoo, as he may not always be successful in elucidating a correct answer from his companions of the preceding evening.

However this may be, a great deal is to be said respecting Coco-Palms, and Betlenut, Pumplemos and Forbidden fruit, the Bread fruit, Indian-rubber tree, the Banyan, Cashew and half a score more, and if he has not previously in England been the possessor of a little Pitcher plant, hermetically sealed and restricted to the last watering of the Hot-house gardener for six months to come, this pretty plant may be pointed out to him as one of the wonders of the Coast :† but here knowledge closes her ample store, and if he has not perseverance to wade thro' Lindley, Moon, Wight and Arnott, Roxburgh, and a few other tomes, studded like the sands of the seashore with hard names, he will have finished his education in six months, and know as much of botany as most of his neighbours do.

Economy and utility are the order of the day. Who has been in tho interior and seen Sugar Plantations, and Coffee Gardens and Coolies clearing, until Coolies are scarce, and will not say that Mammon is hard at work; there is nothing like English labor and industry, and this we will say with three cheers whether in Ceylon, or the Park, or on the Thames with her forest of masts.

Ceylon is a moneymaking land, and many come out to make money and to live to save, but a few are here for a few years, and care less for money and more for agreeable society, and the many charms of the good old land; these regret to find but little of the dulce and society at a low ebb for we are all in the jungle, and just so many Robinson Crusoes with our man Friday.

To the latter it will be no small pleasure to do as we have done in England. History, Literature and the Arts can agreeably vary the usual routine of life, let me also suggest Hortiuclture and her twin sister Botany, for its knowledge will enrich your grounds and house, with many a pleasing object, and pass many a dull hour whilst even the monotonous jungle becomes a source of delight.

(*To be continued.*)

* Who, as Col. Champion, received his death wound, while leading his regiment in a charge during the siege of Sebastopol.—ED. *T. A.*

† The demands of visitors has led to the extirpation of the pitcher plant in tho Colombo Cinnamon Gardens, where once it specially abounded.—ED. *T. A.*

SAPPHIRES IN KASHMIR.

Many persons will remember the discovery of a sapphire mine in Kashmir about nine years ago, writes a Calcutta contemporary, and the absurdly low prices at which the hillmen who first brought the gems to Simla were willing to sell the precious stones. The Maharaja of Kashmir was not long in placing a guard over the mines and raising a profitable revenue from them, and since then the work of collecting the stones has gone on from year to year. The spot where the sapphires are found is near the village of Soomjam on the Bhutna river. It is a small upland valley about 1,000 yards long by 400 yards broad, and is thirteen marches from Srinagar. There are clear indications that in former times glaciers covered the whole of this region, but now they only descend as far as the upper end of the passes leading into Zanskar. About a hundred coolies are employed in working for sapphires, and the method at first employed was merely to dig up the surface of the earth and search for stones. At present, however, the earth is being washed in a spring close at hand, and by this means better results are obtained. The largest stone found in 1887 weighed about six ounces, and was partly of a very brilliant colour. In 1888 the largest stone only weighed 104 grains, and very few were found weighing more than 50 trains. These, however, are not to be compared with the stones brought down when the mine was first discovered. There are at present in the treasury at Jammu some of the first stones discovered measuring five inches in length by three inches in breadth, and though none of them are uniformly coloured but are shaded off into white at the ends, some fine gems might be cut from them. During the working season of 1888, that is, from the 17th July, to the 29th Sept., the total quantity of corundum obtained from the mines was 1,630 tolas, of which perhaps one-fourth would be commercially valuable, but the average weight of the stones was not more than ten grains. The beds, in fact, appear to be getting exhausted and before long the working may cease to be profitable.

Besides corundum other minerals interesting from a scientific point of view, but not commercially valuable, are found in the granite of this region. Though several attempts have been made to discover new localities for sapphires, is in the region they have hitherto all proved unsuccessful, with one small exception. This was a block of granite found near one of the passes into the Zanskar which contained some stones of good size but poor colour. There was no doubt that this block of granite which is the only one visible in the locality had once formed part of the cliffs surrounding the head of tho glacier. It was lying at a level of about 15,500 feet above the sea, and probably came from some point which was much higher and perhaps inaccessible. There are other places in Kashmir where rock crystal, iron ore, and other minerals exist, but none of them are worth the trouble of mining. There are also ironworks at Srup in the Kashmir Valley. The outcrop from which the ore is obtained extends for a distance of at least two miles along tho hill side, and is sufficient to keep the small native furnaces supplied for many years to come so long as there is any demand for iron, but the ore is said to be of poor quality, and there would be no opening for large blast furnaces on the English plan. A good deal has been said of late regarding the great mineral resources of

Kashmir. It may be interesting, therefore, to refer to some remarks on the subject by Mr. T. D. La Touche, of the Geological Survey of India. He writes that in speaking of mineral wealth which might be brought to light by properly conducted prospecting it does not seem to be taken into consideration that the natives of the country have for ages had opportunities of discovering what minerals the hills contain. Even the Khasis of Assam have for years obtained iron from the granite of their hills, where a highly trained European geologist might have been sceptical about finding it. It cannot be doubted therefore that if minerals exist in Kashmir they are known to the natives. Accident may occasionally bring rarer minerals to light, as in the case of the sapphires, but then even an intelligent prospector might search for years in the mountains without making another such discovery.—*Morning Post.*

THE CYCLONE IN QUEENSLAND.

(*By an ex-Ceylon Planter*).

I was at Woodlands at the beginning and at Bicton during the full brunt of the cyclone. Such a crashing and tearing up of vegetation it is almost impossible to imagine. The scrub or jungle is thoroughly torn up by the roots or denuded of tops and branches; trees two and three feet diameter torn up by the roots and laid flat are not uncommon. Earth-slips here and there on the mountains and creek banks washed out to sea. The following day at an elevation about 200 feet, and as far as the eye can see the ocean looks one huge mud-hole strewn with wreckage from the forest. Woodlands house had a very narrow escape, a two-story building; the lower story is tilted over to nearly an angle of 30 degrees while the top story stands erect giving the house a peculiar kink in it; their kitchen and stove, also a two story building, went smash to the ground as also the Kanakas' huts. No life lost or much injury farther than a few scratches and a cold wet rough night of it out in the open. Two young ladies there, neither very strong, must have suffered keenly for they had to fly from the falling houses short of clothing and without any blankets, camping all night among the pineapples. At Bicton where I was, the early part of the night, a continuous hurricane with rain in torrents blowing through into the house until the whole place was well saturated, when shortly after midnight away went the roof of the dwelling-house with a noise stupifying. The four inmates afterwards scrambled out to the kitchen and dining-room and came in there fairly well clad and blankets; they fearing this house would go made for the packing shed at the beach, and took up shelter there, leaving another and myself in the dining-room; we stuck there until the roof and timbers were flying and falling a window blown out and out went I at it, escaping underneath the floor of the dwelling-house and had to cling on to the blocks in about 10 or 12 inches of water for about two hours, afterwards we scrambled on to the beach shed where we found the other four with a fire and camped there until daylight. R. C.

PLANTING IN QUEENSLAND.

(*By an ex-Ceylon Planter.*)

CACAO AND LIBERIAN COFFEE.

Our agri-horticulture has suffered terribly through cyclone, insect pests, rats and the worst of the weather. I am hopeful and able to record that we now have a cacao clearing in Australia thanks to Messrs. Darley, Butler & Co. of your verdant isle; theirs were the only importation of cacao pods that seed germinated out of six lots. (This day, mail day, I expect another and final lot from A. H. T., Esq.) I lost a good few with the cyclone, and the jungle rats also misbehaved by breaking and eating some of the seeds as they germinated. Now the weather is fine we look for their rapid progress. Cacao and Liberian intermediate quincunx fashion; they are now up to a foot high and look fair, healthy plants. I do not look for this industry to be of much favour with the noble working man of Australia, and in fact would not again attempt the pioneering of this product for a trifle; if I had not had enthusiasm it could not been carried out, for loss after loss, disappointment after disappointment, and your best and constant energy overthrown, was enough to turn the head of an iron man. However it is now a fact in the land of the noble working white man; query is not "noble" misplaced? Years will tell. This clatter of unions, strikes and equality tends to degenerate the white man. I am afraid the race will soon be in decade, their glass of prosperity is running very low. Unless a change comes soon you will find the colored and mixed races more prosperous, honest, virtuous, God-fearing and vigorous than the whites; instance the little colony, the Pitcairn Islanders.

MYSORE EMERY.—Some months ago, the *Bangalore Spectator* mentioned the fact that large quantities of corundum or emery were to be found in the Goribidnur Taluk, Tumkur District, Mysore Province, and that the right to collect this mineral was leased out to a native by the Government for quite a nominal sum. Our contemporary's remarks attracted the attention of a Bombay firm, who sent home a trial shipment of Mysore emery, which fetched almost double the price of the best Grecian emery. Agents are now in Bangalore endeavouring to place orders for this material, so that the price in the local markets has gone up 50 per cent. It is believed that this mineral could be profitably mined, and the large number of old corundum mines, near Banavar, in the Kadur district, is pointed to as being a likely spot.—*Indian Engineer.* [In Ceylon, also, corundum of no value by the gem test ought to be profitable as a metal-polishing substance.—ED. *T. A.*]

BARLEY-GROWING on the Nilgiris, unlike many other similar experiments inaugurated or fostered by Government, is beginning to show a fair promise of future success, which must be exceedinlyg gratifying not only to Government but to the local Brewery Companies who have done so much to popularise the crop amongst the Badagas. Liberal prizes are being annually given by Government for the best samples, and these are further supplemented by generous contributions from the Murree and Arvanghat Brewery Companies. The competition for and award of the prizes for last season's samples form the subject of an interesting report recently submitted to Government by the Collector of the Nilgiris. The total awards for last season's samples amounted to a sum of R295, which was equally divided amongst the three "nâds," namely Todanad, Merkunad and Paranginad, three prizes being given to each. The samples exhibited were generally of a most satisfactory character, the majority of the thirty-nine from Merkunad being regarded as "of exeellent quality and difficult to separate." All the samples for which prizes were given were grown from English seed and during the present season only, due care having been taken to exclude old samples. The good quality of locally grown barley is testified in a letter addressed by Messrs. Leishman & Co., to the Collector of the Nilgiris, in which they say:—"We are very pleased to have the honor to inform you that this season's Badaga barley grown from English seed malts very well indeed. In fact we are so satisfied with the barley that we have given instructions to our barley contractor to purchase 2,000 to 3,000 bushels more if it is obtainable. The barley requires a good deal of attention during malting and the malt gives a very high extract." Such testimony as this cannot but be regarded as very satisfactory, and encourages the hope that barley cultivation on the Nilgiris has a prosperous future before it.—*M. Mail.*

THE OKRA PLANT.—Considerable attention is being directed to the okra plant, an annual of South American origin, which, heretofore, has been known chiefly as an excellent vegetable for soups. It has recently been discovored, however, that this plant has an excellent fibre, and an inventor asserts that he has devised a process for extracting okra fibre at a cost not exceeding one cent per lb. It is believed that okra fibre, especially if extracted at this price, will largely displace jute, and it is also likely to come into competition with henequen.—*Industries.* [The "okra" is simply the bandakai, and the "discovery" referred to is by no means "recent."—ED. *T. A.*]

PINE NEEDLE CLOTH.—We have already noticed the manufacture of cloth from Pine-needles as a promising young industry in some of our southern states. A correspondent of the *Atlanta Constitution*, writing from Wilmington, North Carolina, says that at a factory in a neighboring village may be seen specimens of colored mattings made from the "Pine straw," which are excellent in quality and also attractive in appearance, as the straw can be bleached to a fine creamy tint and readily takes brilliant dyes. But the machinery for making this matting lies idle, so great is the demand for coarse cloth for cotton bagging —*Garden and Forest.*

CINCHONA.—At the annual meeting of the Western Java Cinchona Agricultural Company the report was read, which shows that the cinchona prices were far from being favourable. Encouraging reports have been received regarding the estates, and the number of cinchona trees on the four undertakings is at present about 3,975,000, or 225,000 more than in the preceding year. On account of the low prices harvesting was confined as much as possible. The total gross proceeds of the parcels already sold is f.19,963, and the unsold stock on the spot and afloat is estimated at f.63,270, showing a total of f.83,233 appearing in the profit and loss account at a net value of f.65,083. The crop of 1890 is estimated at 150,000 kilos., and of 1891 at 220,000 kilos. 210 piculs of coffee were harvested. According to the profit and loss account, the balance profit, after writing off, amounts to f.24,092, including the balance of the preceding year, and consequently a dividend of f.24 per share, or 2 4-10 per cent can be declared.—*L. and C. Express*, May 9th.

"HEMILEIA VASTATRIX" IN AMERICA ?—If so, coffee is doomed in the Western world as well as in the Eastern. This is what we find in the *Rio News*:—

The following paragraph appeared in yesterday's *Telegram*:—The Jamaica papers publish the following: —"His Excellency the Governor, by proclamation, has prohibited the importation into the island of seeds or plants, or any description of earth or soil, or any article packed therewith, that may have come either directly or indirectly from the republic of Brazil." No reason is assigned for this prohibition. Standing by itself this paragraph seems extraordinary, and calls for some explanation—which we are happy to be able to furnish. The Governor of Jamaica, however, is evidently unaware that the Brazilian coffee epidemic, *hemileia vastatrix*, he is thus endeavouring to ward off from the island has already appeared in Central America. This is the more strange since the fact is already known in England, as the following clipping from the *West Indian* of London indicates:—The cultivation of coffee in Jamaica and some other islands of the West Indies, though on a smaller scale than formerly, is of sufficient importance to induce us to warn planters engaged in this industry of the undoubted appearance of the much dreaded and fatal *hemileia vastatrix*, or coffee leaf disease, in the states of Central America. How it was located in that part of the American continent is not within our knowledge; all we can do is to give timely warning to our West Indian planting friends who, if severely restrictive measures are not adopted, will assuredly find this most destructive pest amongst them before long, despite of expanse of sea between them.—Panama *Star and Herald*, March 8th.

THE BATAVIA *Nieuwsblad* says that the Java coffee crop this year will fall so short as to give rise to serious financial difficulties with the Government. The paddy crop too looks unpromising and the sugar yield is no better. "A deficit in the Budget looks alarmingly near, but the diminished tax bearing power of the impoverished people allows no hope of additional revenue."—*Indian Agriculturist*, May 10th.

BRAZIL.—Many complaints reach us from Brazil about the disastrous effects to the planters of the late slave emancipation. Some of the coffee plantations in the fertile district of Esperito Santo are utterly deserted by labourers, and are rapidly becoming overgrown with weeds. On others a few blacks still linger, and condescend to work for a day or two in each week, but very unwillingly. Similar conditions prevail more or less throughout the remaining provinces of Brazil, and a lare number of planters are threatened with ruin. Meanwhile there is some talk of forming associations for encouraging the influx of European labour. But white workers, besides being dearer, are not suited to the hot, moist climate, and are found very inefficient helpers on a plantation. Some means must be found either of coaxing or coercing the recalcitrant negro, or many a Brazilian planter will find himself deprived of the fruits of a lifetime of labour.—*British Trade Journal*, May 1st.

COCONUT BUTTER.—The *Times* Calcutta correspondent forwards a somewhat strange account of another new butter, the trade in which, he states, has developed to extraordinary dimensions in India. It is reported to be made from coconut milk, and to be pleasant to the taste and smell, and of a clear, whitish colour, free from acids, and easily digestible. The curious part of his story is that the coconuts are sent to Germany, there to have the milk extracted for the manufacture of the butter, one firm turning out, it is said from 3000 to 4000 kilograms daily. We know that so many millions of the inhabitants of India are strict vegetarians in accordance with their religious ordinances, that vegetable butter is finding a large sale there, and already one or two varieties of such butter have been referred to in these pages. It would be interesting to know whether the milk of the coconut could not be made into butter in India itself, instead of being transported thousands of miles to be manufactured in Europe ?—*British Trade Journal.*

ORANGE CULTIVATION ON THE NILGIRIS.—Besides the paper on Viticulture noticed by us the other day, Mr. Lawford has contributed one on the cultivation of the orange and other citrus trees in California. It is superfluous for us to dwell on the subject in detail, as the cultivation of oranges and limes, on the Nilgiris is carried on with marked success. Not an estate but grows scores of trees of this family; some of the very best varieties. They are planted either in avenues or scattered among the tea and coffee. Little of the fruit, however, benefits the proprietor as it is stolen and consumed by the coolies. On some estates orchards are formed and enclosed including orange trees marvellously prolific. As an example we may instance that at Billicul. The soil here is gravelly, but by years of preparation it has become rich and productive. The trees are umbrageous and healthy, sufficiently close to yield a dense shade, and when in blossom, the air is redolent with perfume and cool even during the hottest part of the day. The fruiting season extends from November to February, when the grove is a fine sight, every tree laden with thousands of the golden fruit, some of the branches so abundantly as to need propping up. The fruit at Billicul is mixed, but mostly of the thick skinned variety, juicy and sweet but alas! The demand for it has always been insignificant, and basketfuls every year, that could find no purchasers, were buried as manure.—*South of India Observer.*

SILK.

It is claimed by some manufacturers we know of, that our dyes—we cannot say very fast ones now-a-days—are unexcelled; that in the matter of plushes and velvets we stand alone. This may be so; certainly the qualities are gorgeous. And in the matter of economy, ask our friends in the North—say, by the Clyde side—what they fabricate from the "ends" that were formerly of such little use—whence they procure these nozles and chenille curtains. The gouty threads of Eastern raw silk have stimulated the ingenuity of our inventors, and now the automatic fingers stop the wandering of gouty silk so soon as a knob is encountered in the process. Very many of our readers will doubtless avail themselves of admission to the St. James's Square ball room, and will judge for themselves on all the matters above mentioned. English ladies, certainly excellent judges in most matters, will fail in this instance. Raw silk from the East is very largely used here—much of it from an uncultivated worm. There are many observers now roaming over the Indian Archipelago and other places, promising surprises, or new sources of supply of articles of known value; it is to be hoped that an observant botanist or two may be found amongst the comercial roamers who possess an eye to the evolution of silk and the food of the evolutionests. Our Antipodean colonists might find it to their interest to bestow more attention on the culture of the Mulberry tree and the breeding of the silkworm than they have done.

From a recently issued Consular report on the trade of Italy, we glean he following particulars respecting silk. In passing, it may be remarked that, although this document consists of only eighteen pages of letterpress, the compiler has in them stowed away a wonderful amount of statistical matter. He says:—In the year 1888-1889 over 50,000 quintals (1 q. = 100 lb.) of raw silk were exported from Italy, which, together with the amount of cocoons form 9-10ths of the product exported under the denomination of materials necessary for industries (about 320,000,000 fr., or £12,800,000 sterling). The silk imported is consequently in a very favourable condition, both in a raw and in a manufactured state, while the import is steadily decreasing.

As to the *£ s. d.* aspect of the subject, doubtless information could be obtained from the President of the Association, Thomas Wardle, Esq., F.C.S., F.G.S., Leek.—*Gardeners' Chronicle.*

MULCHING FRUIT TREES, ETC.

There is one matter of modern practice which gets insisted on in and out of season, by gardeners in print and in speech, and which runs the risk of getting overdone, and that is mulching as applied to the roots of trees in our orchards and kitchen gardens.

Mulching, as applied to trees newly planted, is right enough, and is a help to speedy rooting, equally applicable to the forest tree or garden shrub. Even in these cases the amount should be small, and not extend much beyond the root area, its sole object being the retention of moisture in the soil; for if the latter becomes evaporated by hot sun and parching wind, the interstices of the soil become filled with air, which draws the moisture, or in other words the sap, out of the roots in a harmful degree, and the exhaustion of moisture from the soil is only partially replaced in the warm season by capillary attraction from below, or by uncertain rains. Before mulching became so generally advised, we were taught to rely on a crumbly surface to retain moisture in the laud, and for all subject not recently planted, I prefer it to mulching, as being better adapted to our moist climate and weak sunshine. For if mulching has its benefits, it also has the one great drawback of hindering the action of the sun in aerating and warming the earth. We look to the sun as the one source of heat wherewith plants are enabled to grow, and yet we do much by putting on masses of non-conducting material like wet straw and Fern, and even short grass, to hinder the access of sun-heat to the soil surrounding the roots of our trees. I will remember an instance of successful Peach, Apricot, and Fig growing in a garden 300 miles north of London, where the gardener—who, by the way, had never missed a crop in the thirty years he held the situation—never employed mulching to his wall trees after the first summer following replanting. The border was of moderate depth, of lightish loam resting on basalt rock, or the overlying strata of heavy loam inclining to clay. The soil of this south border was warm to the depth of one and a half feet, because there was no non-conducting medium spread on its surface; growth on the trees was moderate, and it ripened satisfactorily, forming plenty of blossom buds. The surface was pricked up twice during the summer, and hoed as often as became necessary to keep down weeds; and walking on it was by no means forbidden—and this was quite judicious, for nothing tends to good rooting, short growth, and fruitfulness like a firmly trodden soil. In wet weather only were the gardeners directed to keep to the row of rough plants, which stretched from end to end of the border.

Mulching, unless it be very light indeed, has a tendency to prolong growth in the autumn, and hinder its commencement in the spring, and is wanted only in the lightest of soils, at least so far as established trees are concerned. Rosarians will tell us that exhibition blooms cannot be got without mulching, and the season of bloom would be unduly shortened without it, and yet good Roses can be obtained without its aid. The Rose grower finds it an easy way of feeding his plants, as by employing strong farm dung for the purpose he is able to do that, and needs not to go round to his pets with a potful of stinking manure-water from the piggeries or the stable, but instead thereof waters his mulching with clean water. That is entirely a matter of convenience, and does not touch the real point of the case. He is satisfied if his Rose blooms beat those of his rivals, and, moreover, the Rose puts forth its shoots at an early part of the season, and become early matured even under this treatment; and the Rose grower does not look for a big crop, but only a few superlatively good flowers. Here, therefore, the man who mulches does but little harm, even from my point of view.

Where mulching is of the greatest use, and does scarcely any injury to the plants over which it is placed unless a great thickness is made use of, is on plants on the rockery, in the flower-beds, Strawberry beds, edible and sweet Peas in beds or rows, Hyacinths, Tulips, Dahlias, Hollyhocks, Rhododendrons, &c., which in the main exist by means of roots near the surface of the soil. To encourage the growth of these roots by means of mulching containing little or no manurial elements, or still better in the case of the vegetables named, with one that may consist chiefly of dung and straw, is quite reasonable and legitimate practice.

Coco-nut fibre refuse is now greatly in favour as a mulching material, and for covering the soil beneath plants with small sparse foliage, as bulbs which flower in spring, beds formed of plants in pots for immediate and temporary effects, or where it is desired to hide the soil before the plants cover the same. The use of this kind of fibre rests chiefly on the nice contrasts of colour obtained, and the greater degree of finish and neatness its employment imparts to beds of plants; and as it contains nothing that is edible it is not disturbed by birds in search of food, nor do earth-worms throw their cast up through it. It contains no plant-food whatever, and may therefore never find employment as a feeding mulch.

To plants which are not expected to carry exhaustive crops of fruits, one of the best mulches is half-decayed leaves, or rather leaves left to decay about plants with many surface-roots. These should lay not more than 1 inch in thickness, and may be kept in place by a little soil being sprinkled over them. In beds of shrubs, the wind will disturb the leaves at the outside, and these parts only will require to be kept in place in the manner above stated. It may seem odd to many to recommend pieces of stone, boulders, or pebbles as a mulching, and yet these things rank among the best retainers of moisture and also of warmth—points of great importance. Our ordinary mulches are not bad moisture-keepers, but they are the worst of heat-keepers; whereas

dark-coloured boulders are about as good as could be found. Roofing tiles, and less so roofing slates, are excellent means of drawing roots to the surface, when laid down pretty close together over the soil. This was recognised by our forefathers in growing the Strawberry, for they lined the rows of plants with the common red tiles, and obtained clean fruits, and plenty of roots near the top. Of course, the tiles were only down in the summer-time. It is a capital plan for growing early crops of these fruits on steep sloping banks facing south.

Most Ferns are benefited by growing amongst stones, if the soil employed be suitable, or by having stones placed around them; and as a rule the more stone and the less soil the better do the plants grow. In cases where boulders or sandstone cannot readily be obtained, and the Ferns grow on the level land, it will be found good practice to employ a mulch of leaf-mould, which should be only partially decayed. In all that has been above stated, there is nothing whatever that can claim to be new; but it is obviously of benefit to bring out of the horticultural arsenal some of the old appliances, for fear they should become rusty and forgotten.—A. Y. E.—*Gardeners' Chronicle.*

MYSORE COFFEE-PLANTERS' GRIEVANCES.

A "European in Mysore" writes as follows from Munzerabad to the *Weekly Scotsman*:—

SIR,—I have been deputed by a circle of Coffee planters in the Hassan District of Mysore to air our grievances in your paper, which has a large number of subscribers in India.

People say that farmers and such like are always grumbling, and the same charge is made against us; but our troubles do not spring from the weather or low prices or short crops, quite the reverse. Still our grievances are very real, and we hope some of your readers will advise us how we may better our condition.

I have no tale to tell of atrocities or tyranny, but to speak of the labour question, and to say that the disregard by the judges in this native State of our rights with reference to this question are very annoying to true born British subjects.

1. THE LABOUR QUESTION.—Formerly labour was in abundance. The supply exceeded the demand, but with the rise in prices new gardens have been opened, and the demand is increasing every day. Labourers either come as individuals and offer their services, or are brought in gangs by *maistrees* or contractors, who borrow from the planter and procure coolies of a certain caste to work off the planters' advance on the estate. The contractor has to advance the travelling expenses of his gang from their home to the estate, and every coolie is the contractor's debtor until the advances are cleared off. In one district, Shimoga, a tribe called Lambani or Brendiari used to work without a *maistree* over them; but from South Canara (in British territory) labourers of the Buntras caste were brought in gangs to North Mysore, and these two classes of labourers were mixed together. At first the contracts to provide labourers to work for the money advanced were faithfully fulfilled, but as the demand for labour increased the contractors began to enter into contracts with several planters at once and disappoint them all. To make matters worse, the Lambani tribe followed their example, to the serious inconvenience and loss of the planters.

If the labour market could be controlled by the European planters no difficulty would be left; but with the rise in prices the native ryots have taken to coffee cultivation in their garden patches, and the Holiyah labourers, whom they formerly employed for a mere pittance, are now able to earn good wages, and the ryots have adopted the system of making advances to the contractors; and, in short, competition has found its way into a labour market which in the good old time was ruled by custom. The native is demoralised by increasing prosperity, and if the law cannot interfore to enforce agreements, the system of contract must be abandoned.

2. Mysore is a native State. On 25th March 1881 the adopted son of a former Rajah was installed by the Governor of Madras, and the Government of the country was handed over by the Mysore Commission to the Brahman Diwan, or Prime Minister, the *ex-officio* head of every department. The Mysore Commission consisted of three British officers, the pick of the Bombay and Madras Staff Corps, and the State was splendidly governed in all departments. No finer roads were to be found in the world. The public bungalows were substantially built, and well conducted. Irrigation works were carried out on a large scale. In the Judicial Department the Courts were conducted by Judges who understood the native character, and could administer justice without suspicion of partiality for Europeans. The police were well-disciplined, and under the firm control of their superior. In short, the government was as good as British territory. But when the government came into native hands a change was felt by the Europeans in the country. The Judges are now recruited from a class of men who know nothing about the country, and will not go out of their way to inquire. It is useless for planters to appeal in questions about native labour to men of this stamp.

Our grievance has recently taken a very tangible form in connection with what are called the Labour Ordinances. Act XIII of 1859 has always been understood to have been passed expressly for the purpose of protecting employers of labour from fraudulent contractors, journeymen, artificers, &c. . . . With the return to native rule a new and serious cause of complaint has arisen. One of the Mysore judges has interpreted our agreement to be nothing more or less than a bond of slavery. . . .

Yet, in spite of all our grievances, coffee planting is a splendid life. It requires men of stamina and judgment to overcome the increasing difficulties of the coolie labour question, but if a satisfactory interpretation were put on Act XIII. of 1859, and if there were some appeal to a competent Court from the childish objection of the Hassan *munsef* with regard to an agreement which is made every day, our troubles might soon disappear.—*Madras Times.*

NEW ZEALAND FLAX OR HEMP.

To the Editor, "Norfolk News."

Sir—No subject is of more importance to the dwellers in the Eastern Counties than the question of agricultural depression, its causes, and the best mode in which these can be met and overcome. This is a vital question to all in Norfolk as, until prosperity can be restored to Norfolk agriculture, there will be no general prosperity of our county population, either town or rural.

The agriculture of Norfolk is largely dependent on plants introduced into the country for growth as agricultural crops during the present century. I mean the swede turnip, introduced about 1815; the beet root, about 50 years ago; and the kohl rabi and various cabbage plants, within the memory of the existing generation. Let any Norfolk farmer consider how he would now manage his farm without the aid of these plants.

I have for some time past kept a sharp look-out to see whether any other new plant could be introduced into England which would be likely to be equally beneficial to Norfolk agriculture; and I think there is one as to which there is a strong probability of its being capable of being beneficially introduced, not only into this county, but into other parts of England. It is the plant with the name of which I have headed this letter, which holds out, I think, fairer prospects of profit to the farmer than jam.

New Zealand flax or hemp is a plant which grows naturally in the New Zealand Islands and in Norfolk Island only. It has a range as a native plant of [illegible] degrees of latitude, from Norfolk Island to the southern end of the middle island of New Zealand, a district which may well be compared, in range of variety of climate, to the same range of latitude in

Europe lying between Edinburgh and the southern coast of the Island of Sicily. It therefore grows in an intertropical climate as well as extends into and throughout the New Zealand province of Otago, which has a winter of frost and snow very similar to our own in Norfolk.

A short time ago I entered into correspondence with Mr. Daniel Morris, the Assistant-Curator of the Royal Gardens at Kew, asking information as to this plant. I received most courteous replies, and every aid that could be afforded by him. During the last week in February I called at Kew, and was shown by him the plants growing in the open air in the gardens, as well as in the temperate greenhouses, and I was also shown the scutched fibre and manufactured products made from the plant, and was referred for further information to the work issued by the New Zealand Government, written by Sir James Hector, which can be purchased at the office of the Agent-General of New Zealand, at No. 13, Victoria Street, London, S. W., for 2s., and I refer all persons who may take an interest in this matter to that work.

At Kew, I found the plant a most magnificent one, with broad rush leaves, even at this period of the year, of a green as briliant as holly, but of a lighter hue. The leaves were on some plants at least eight feet long. The largest clump of plants at Kew was protected by tying the outer leaves together so as to shelter the inner ones, but about six other clumps of plants were wholly unprotected. I was informed that the oldest clump had been in the gardens for fifteen years, and had never been injuried by frost. The other plants had not been there quite so long; but, although left quite unprotected, had never been injured by frost.

I find from Sir James Hector's book, and the information given me by Mr. Morris, that there are nearly eighty varieties of this plant growing naturally in New Zealand, that each variety grows in a different situation, soil, and climate, some in swamps, some high on the mountains in the northern island, and in every variety of soil and situation. The plant has evidently the capability of readily adapting itself to every soil and climate within a wide range. It is considered to be descended from one parent variety only, and, therefore, will probably readily adapt itself to other soils and climates within a similar range on this side of the globe, as it has done at the Antipodes.

The plant, although the one main variety is most prevalent in swamps, by the side of running water, or where the swamp has had the stagnant waters drained off from it, also grows, as do other varieti s, on every soil, from the lightest sand to the heaviest clay. These plants vary in length of leaf according to the more or less fertility of the soil on which they grow and the variety of plant prevalent thereon.

The plant has from time immemorial had its fibres extracted from the leaves by the native Maories, and been used for weaving into various kinds of cloths and for very various purposes; but the process of extracting the fibre was a very slow one, and the article could only be produced in small quantities and at a high cost.

From the time of the early settlement of the colony down to recent times, machines have been invented for preparing this fibre for the various purposes for which it is available. Within recent years several effective machines have been constructed, and are now in operation in New Zealand. By this means fibre of several different qualities have been produced, and mainly exported to England. The lowest quality of fibre for rope-making is saleable in England for about £20 per ton, and of this about three-fourths of a ton can be produced from an acre of the flax plants, with about an equal weight of tow suitable and saleable for paper-making. But by a more careful process and selection of the best leaves, fibre of a silky, lustrous kind can be extracted which is of the value of from £50 to £70 per ton, and the very best silky, lustrous fibre made by the natives by hand is worth from £70 to £100 per ton.

It is not positively known for what purposes this fibre is used, but is believed to be used in England in the manufacture of silks and poplins. I think I have stated sufficient facts to show that if the fibre can be produced in New Zealand, where unskilled labour is paid at the rate of 8s. per day of eight hours, bear the cost of freight to England, and then is sold in England for use in manufactures either of rope, paper, or woven fabrics so as to yield a profit to its producers in New Zealand, it can be produced so as to yield a larger profit in England, where the market for it exists, if the plant can endure the English climate.

That seems to be the only difficulty which will have to be surmounted, and that can only be decided after experiments in the possibility of growing it here have been made.

In Sir James Hector's book it is mentioned that experimentally, one plot was planted in the Domain Garden, at Christchurch, alongside of other plots, the plant having been obtained from the warmer climate of the northern island; and, while adjacent plots bore the cold climate uninjured, this one plot was totally destroyed by frost, evidently succumbing to the colder climate to which it had been introduced without having become first acclimatised. In making experiments it will, therefore, be requisite to obtain the seeds or plants either from the parts of the southern island which have a cold winter like our own, or from the mountain sides, which lie at such a height above the level of the sea as to have about the same climate as that existing at the southern end of the middle island of New Zealand, and the seeds and plants should be of the varieties which in New Zealand have proved capable of sustaining the colder winter climates existing thereon.

Although very little artificial cultivation has existed in New Zealand, what has taken place has been by planting off-sets or side-shoots taken off old plants in the same way as the sugar growers plant their sugarcane plantations.

It will be requisite, probably, to commence in England with plants raised from seed, because no stock of plants exist in England; and this will at first be a difficulty, because it is said that when grown from seed taken from a specific variety of plants the produce does not come true to that variety. It is said that the plant has been introduced for some years into the southern island, but I have no information as to its growth there.

When artificially grown in New Zealand, the plants have been planted at distances of six feet between the rows, with an interval of six feet between the plants in the rows, requiring about 1000 plants to the acre; but in some cases they are planted with intervals of three and four feet respectively, requiring a correspondingly larger number. To produce from seed it will be requisite that the plants shall be from three to four years old before they arrive at maturity. To solve the question of the power of acclimatisation in England, it will only be requisite to have small plantations of seedlings in corners of fields, and if they will endure the climate for the first two years, then to transplant them into regular plantations, the early nursery plantations being more closely grown than the later one, and therefore occupying comparatively very small space.

If the plant can be grown in England, it will be very suitable to be grown on lands held by the land owner in hand, like the plantations where underwood and hop poles are grown, and, like those plantations, the flax will make game coverts of the best description.

The plantation, when established, will require no annual labour expenditure, except to keep the ground free from weeds, to cut the leaves, and scutch out the fibre.

All that can be realised above this cost will be of the nature of annual rent, realised out of the plantation by the landowner.

It will probably be more suitable for growth on the fen lands than for any other, but there are varieties in New Zealand which grow on every description of soil although not so productive.

Having launched this question before the county, I think I may fairly leave it for the future in the hands of the landowners and tenants who are chiefly interested, merely suggesting that it is a case to be

taken up by both our county agricultural societie and the Royal Agricultural Society.—I am, sir, you obedient servant, W. G. WINEARLS.
Swaffham, Norfolk, 4th March, 1890.

THE MICROSCOPIC STRUCTURE OF PLANTS, AND ITS RELATION TO CULTIVATION.

A very interesting discussion took place at the Paris Botanical Congress last August, and a report of which is now before us, on the employment of microscopical characters as an adjunct to classification. M. Vesque, who introduced the subject, was, we believe, perfectly right in insisting that the comparative study of the microscopical characters presented by plants should receive a due proportion of attention as other characters do. It does not follow that they are better or worse than others. We do not know at present what their precise value may be, whether they are as subject to variation as others; but their importance cannot be denied, and to allege that they are difficult and troublesome to investigate, though it may be true, is no argument against their intrinsic value, In so far as they are hereditary, and, therefore, relatively constant, they are known already to be valuable aids in discriminating the larger groups of plants, and what M. Vesque and some other naturalists are anxious to do, is to extend the use of these characteristics to each natural family of plants, so far as circumstances permit. Any arrangement founded on these characters alone, would, of course, be just as unsatisfactory as any other artificial or incomplete system would be. We do not suppose that M. Vesque has any intention of founding a system entirely on these characteristics. For classificatory purposes the congenital characters, more or less fixed by long hereditary transmission, are naturally preferable to those characters which are called "adaptive," because they vary according to circumstances. These are the characteristics, the possession of which enables a plant to sustain itself under new or adverse conditions; these are the endowments in the absence of which the plant cannot survive in the battle of life. Whether then, from the point of view of classification, of relative constancy, or from that of adaptation to varying conditions, the anatomical characters appear to be of the highest importance, and this is so obvious that it seems strange that any contrary opinion can be maintained. Such an opinion can only be entertained under a misapprehension.

But in these pages we are more directly concerned in the relation these characteristics bear to the cultural art. It is certain that many structural details are directly associated with variations in the conditions of life. The structure of a plant that passes its life in water is widely different from that of its near relative that grows on dry land. So intimate is the relation between the structure of a plant and the circumstances under which a plant grows naturally, that it is very often possible to recognise in a previously unknown plant the kind of life it must have been subjected to. Of course from our ignorance and limited knowledge, there are many exceptions and much that seems anomalous. But these facts form no valid argument for not availing ourselves as far as we can of what we do know, still less does it constitute a reason for not pushing our researches further in this direction. M. Max Cornu, in discussing M. Vesque's paper, seems to have objected to it as proposing a new system—a substitute for the natural system—but a perusal of M. Vesque's writings leads to no such conclusion. All that M. Vesque wishes to do, so far as we can make out, is to enlist anatomy in the work of perfectionating the so-called natural system.

M. Cornu, too, also raises objections to the employment of anatomical characters as a guide to cultivators. M. Vesque said that the anatomical structure [sometimes] clearly indicates the natural of the physical conditions to which the plant is adapted, and which must be realised as much as possible under cultivation. To this M. Max Cornu objects, and says that we cannot in general realise what conditions would be necessary in the case of plants removed from their natural surroundings and placed under other circumstances, to which they must adapt themselves or perish. Many of them live and prosper under the new conditions—conditions which are quite different from the natural ones. What information, asks M. Cornu, could the study of structure give us, since different conditions give results superior to the normal ones? Coffee, says he, requires a rich (*forte*) soil in the tropics; it would perish here if grown in such a soil. The Nepenthes cannot, he says, be grown here except in an extremely porous substratum, while in Sumatra the soil in which the Nepenthes grows is a heavy impermeable loam.

In replying to M. Cornu's observations, M. Vesque admitted his inability to reply to the two special cases —that of the Coffee and that of the Nepenthes, but stated that he was chiefly concerned with the relations of the structure to light and moisture, and doubted whether M. Cornu would succeed in making a plant adapted to grow in the shade flourish in full sun, and *vice versâ*; nor a plant adapted to a dry climate thrive in a moist one. In support of his argument, M. Vesque called attention to the construction of plant-houses divided into separate compartments. allowing of variations of temperature and moisture, Anatomy often indicates what the treatment ought to be, or, inversely, in which compartmen t(*cal*) we ought to place a plant.

Great difficulties stand in the way, no doubt; the application of a knowledge of anatomical structure to cultural purposes is in its merest infancy, but that it is destined in future to play an important part in practical horticulture, seems to us as absolutely certain as that a knowledge of the letters of the alphabet will, under given conditions, enable a gardener to read the *Gardeners' Chronicle!* It is not to be expected that practical gardeners can as a rule become expert microscopists, but they can profit by the skill of others, and it is the duty of those who have the power and the means at their disposal to hasten and foster the progress to the utmost of their ability.—*Gardeners' Chronicle.*

INDIARUBBER.

In these days, when local horticultural societies are formed in almost every provincial town, and when botanical and horticultural novelties attract so much attention from scientists on the one hand and cultivators on the other, the practical value of the combined efforts of both seem likely to be lost sight of. The interest attached to the successful growth, or to the flowering of a rare plant like the Amorphophallus at Kew last year, is equally divided between the scientific botanist and the practical horticulturist, but the introduction and successful cultivation of some valuable economic plant in countries very far distant from its native home, does not secure half so much popular attention, though the benefits accruing from it to the world at large are infinitely greater and of a more lasting character. What is the production of a double flower where a single one was known before only to exist, or even the introduction to our stoves of such plants as the Victoria regia and the Amorphophallus titanum, or, if possible, the Rafflesia, and Welwitchia, to the etablishment in India of the Cinchona plants which has been the means of bringing that most important medicine, quinine, within the reach of all.

The result of this successful enterprise will always stand as a monument of the union of science with practice, and one of the benefits to the world in which Kew has played so large a part.

Next to this achievement, the introduction of rubber-producing plants into the various possessions of the British Empire is undoubtedly of the greatest importance. Though the whole history of these experiments has been given in the Reports of the Royal Gardens Kew, ranging between the years 1873 and 1882, it may be of some interest to point out that whereas some

twenty years ago indiarubber, or caoutchouc, was known to be produced only from Hevea braziliensis, then known as Siphonia elastica, from Para, and from Ficus elastica, from Assam, the researches of the authorities at Kew have since shown that the rubber of commerce is drawn from several different plants, belonging to the natural orders Euphorbiaceæ, Urticaceæ, and Apocyneæ. The first-named family, including the Para sort, or Hevea rubber, which is still imported in large quantities, and holds its own as the best quality, though in its native forests the trees are said to be more and more difficult to get at, as the collectors have to penetrate further each year into the more inaccessible parts. The natural consequence of this is, that more attention has been given to other sources, and another Euphorbiaceous plant, the growth of which has become considerably developed of late, and which yields the rubber known in commerce as Ceara scrap (Manihot Glaziovii), has been introduced into Ceylon and other countries, where it has grown rapidly. This, as its name implies, is a Brazilian species, and though the rubber has been known in trade for a long time, the plant yielding it was not known till about fourteen years ago, when a consignment of plants was received at Kew, propagated, and widely distributed to India and Ceylon. The success of the plants in these countries has been recorded and fully detailed in the Kew reports before referred to; as also that of another well-known source, namely, the Castilloa elastica, which furnishes the bulk of the rubber from Central America, such as that known in trade as Guatemalo rubber.

Mr. Morris, in his little book on *The Colony of British Honduras*, gives some interesting notes on this tree, and details as to the cultivation and the extraction and preparation of rubber from it. He says:— "The tree is very abundant in some places, although daily becoming scarcer in the immediate neighbourhood of settlements. It grows to the height of about 40 or 50 feet, has a thick clean stem about 2 feet in diameter at the base, and in habit of growth much resembles a Bread-fruit Tree, to which, indeed, it is closely allied. . . . The Castilloa Rubber-tree is fit to be tapped for caoutchouc, or the elastic gummy substance produced by its milk, when about seven to ten years old. The milk is obtained at present from trees growing wild by men called rubber gatherers, who are well acquainted with all the localities inhabited by the Toonu (under which name the plant is known in Honduras). The proper season for tapping the trees is after the autumn rains, which occur some months after the trees have ripened their fruit, and before they put forth buds for the next season. The flow of milk is most copious during the months of October, November, December, and January. The rubber gatherers commence operations on an untapped tree by reaching with a ladder or by means of lianes, or tic-tics, the upper portions of its trunk, and scoring the bark the whole length with deep cuts which extend all round. The cuts are sometimes made so as to form a series of spirals all round the tree; at other times they are shaped simply like the letter V, with a small piece of hoop-iron, the blade of a cutlass, or the leaf of a Palm placed in the lower angle to form a spout to lead the milk into a receptacle below. A number of trees are treated in this manner, and left to bleed for several hours. At the close of the day the rubber gatherer collects all the milk, washes it by means of water, and leaves it standing till the next morning. He now procures a quantity of the stem of the moon plant (Calonyctyon speciosum), pounds it into a mass, and throws it into a bucket of water. After this decoction has been strained, it is added to the rubber milk in the proportion of one pint to a gallon, or until after brisk stirring, the whole of the milk is coagulated. The masses of rubber floating on the surface are now strained from the liquid, kneaded into cakes, and placed under heavy weights, so get rid of all watery particles. When perfectly drained and dry, the rubber cakes are fit for the market, and exported generally in casks."

"A large tree of Castilloa, say 2 feet in diameter, will yield 8 gallons of milk when first cut; each gallon of milk, in the proper season, will make about 2 lb. of rubber. Hence, a tree of this size will give a return of 16 lb. of rubber, of the value of 10 dols."

Mr. Morris further refers to the use of the Castilloa as a shade-giving tree in connection with the cultivation of Bananas, Cacao, Liberian Coffee, Oranges, &c., and records the fact that at the time he wrote in 1883, the Cacao planters in Trinidad were gradually discarding their recognised shade-tree, the Erythrina umbrosa, and adopting others more suitable and more profitable, none of which, however, could compare with the Castilloa, "either in quickness of growth, in shade giving properties, or in the return which it is likely to give the planter year after year, if properly treated." Our engraving on p. 649, taken from a photograph kindly sent us by Mr. Hart, represents a Castilloa tree growing in Trinidad.

It will be sufficient to say that the plants already referred to are the principal sources of the American rubbers of commerce. Quantities, however, come from India, and from other parts of the East, the former from Ficus elastica, and the latter from various plants belonging to the Apocynaeæ, being species of Willoughbeia, Leuconotis, and Chilocarpus; while on the East and West Coasts of Africa, severals species of Landolphia yield rubber of excellent quality. A detailed account of these species, and of their distribution into various parts of the world, is given in the Kew Reports before alluded to, and it forms one of the most valuable and interesting records of work done at Kew.—J. R. J.—*Gardeners' Chronicle.*

CEYLON PLANTING ENTERPRISE.—An experienced planter who writes congratulating us on the completion of another Edition of the "Handbook and Directory," deals with the Planting Statistics as follows:—"220,000 acres of tea at 250 lb. are sure to give us 60,000,000 lb. of tea. Coffee,—Well, the less said about it the better. A crop of 3 cwt. one year and 1 the next, just about pays its way at present prices and that is only what you get off the best estates. Coffee is a *delusion* and a *snare.* Cinchona is ditto ditto unless it rises to 2½d a unit." But what about Cacao and Cardamoms, and Rubber if the talked-of "boom" in the home markets comes on?

TOBACCO.—With all the able remarks made by Mr. J. Berry White at the meeting of the British Deli and Langkat Tobacco Company on the disastrous attempts to grow tobacco similar to that produced in Sumatra we fully agree. Borneo is the only other place that can cultivate it successfully but, in common fairness to that country, we would point out that the statement "if it fetched $1 per lb. it would not cover expenditure," is scarcely accurate. It is almost too soon to say what Borneo will eventually do in the way of growing tobacco, for the country is now going through the difficulties of labour, sickness, &c., which the earlier planters in Sumatra know so well. But one company which has been established for three years, and whose 1888 crop was sold at an average of 1s 10d per lb. (covering a large proportion of broken leaf), earned and paid a dividend. Without laying down any hard-and-fast line, it seems that Borneo will be able to produce tobacco which, if sold at a guilder a pound, will yield a fair profit. In any comparison between the cost of producing tobacco in the two countries it must be rememberd that there is no poll-tax on Chinese entering Borneo, and that food supplies in most of the districts are much cheaper than in Deli. We hear a rumour—though we have no confirmation of it—that an offer of 4s per lb. has been made for the 1889 tobacco crop of the Darvel Bay (Borneo) Tobacco Co., the estate which was launched by Baron von Stein.—*L. and C. Express*

Correspondence.

To the Editor.

CEYLON TEA IN AMERICA: MR. STANTON'S VISIT.

Brunswick Hotel, New York, U.S.A., April 29th.

DEAR SIR,—I last wrote you from America on the 29th ult., and I have since that date visited many towns both in the United States and in Canada and wherever I have been, I am glad to say, I have been shown samples of Ceylon Tea. This tea is becoming known everywhere in both countries and is pushing its way—it may be slowly but I think there is no doubt that it is *surely*. The trade appears to have taken root, and now it is beginning to grow, and appearances point to a steadily increasing trade, and one which seems likely to be capable of great expansion. I think a very good work might be done by the Ceylon Planters' American Tea Company did their means permit of their distributing their energies in various towns. *Here* I think they will be a most useful factor, but I feel that still greater benefit would result to the industry if branches could be opened in other cities of the United States, or in some large town in Canada, such as Montreal or Toronto. It is so much easier to reach the actual *consumer* through an agency of this kind than in other ways and, naturally when once a demand is created and the consumer is caused to *enquire* for Ceylon tea—the trade will not be slow in responding, by purchasing themselves in order to supply this demand.

It will be perhaps specially interesting to Ceylon tea planters to hear that I have seen all kinds of Ceylon tea in my travels—not only all grades—pekoes, pekoe souchongs, and broken pekoes—in some cases also fine orange pekoes—but teas grown at all elevations—some possessing strength more especially, and others being bought entirely on account of their flavour.

Hence Ceylon tea planters may take comfort and encouragement from the present condition of the trade here, and I think they may look forward with confidence to a marked development in the trade. Although much of the tea now seems to be used for mixing, I am happy to say I have come across one or two places where it was being sold in its pure state—unblended with any other kind—and this not by persons interested in tea plantations—but simply and solely on account of the intrinsic merits of Ceylon tea which they had recognized to their personal advantage, because the result was a considerable demand for their teas!—I am, dear sir, yours faithfully, A. G. STANTON.

CEYLON TEA IN CANADA: MR. STANTON'S VISIT TO AMERICA.

Halifax, N. S., May 8th.

DEAR SIR,—The last letter which I wrote you was from New York on the 29th April; and since that date I have visited Boston, S. John, N. B., and Halifax, N. S. In Boston there is some demand for Ceylon tea, and its use appears to be on the increase. This town is an important tea market, and I find both Ceylon and Indian teas have a considerable sale there.

St. John, N. B., and Halifax, N. S., although both considerable tea markets use very little besides China tea. One of the largest tea firms here told me there was absolutely no sale for Ceylon tea, but on going round to a number of retailers I found that a demand was commencing and that already business in Indian tea is being done to some extent—besides on a limited scale in Ceylon teas. I should think New Brunswick and Nova Scotia would soon become large consumers of Ceylon and Indian tea, because they take so much China congou that the same conditions which led to the increased use of Indian and Ceylon teas at home should apply with equal force here. I believe, on that account, it would be worth while for Ceylon planters to make a special effort to get their teas worked in these provinces—either through the Ceylon Planters' American Tea Co. or in some other manner.

In the United States where so much Japan and Oolong tea is used it is not surprising that Ceylon tea has made slow progress—but here it ought to make very rapid advances if only there were any-one to draw people's attention to it; the present also appears a specially favourable time for its introduction, as large quantities of very inferior China teas have recently been brought over here—and seem to have somewhat disgusted people. I believe it may be from this cause that just now more attention is being drawn here to British-grown teas amongst the retailers.

My tour in Canada and America has now almost concluded—I have visited all the towns which I came out to see; amongst other places Philadelphia, Baltimore, Chicago, Montreal, Ottawa, Toronto and Hamilton—besides those already alluded to in this letter. Wherever I have been I have seen a great deal that leads me to believe that the Ceylon tea trade here is but in its infancy and that it is certain to grow and to grow surely even if somewhat slowly. I have been surprised to see how much Ceylon tea is already used in Canada and the States—to a much greater extent than is generally supposed.

The prospects of Ceylon tea on this side of the Atlantic are therefore decidedly encouraging—and with efforts to force the trade—on the part of Ceylon planters—there should soon be an extensive and increasing market for their produce.—I am, dear sir, yours faithfully, A. G. STANTON, (of Gow, Wilson & Stanton).

COFFEE BLOSSOM—AND ETCETRAS—ABUNDANT.

DEAR SIR,—Any connection between mangoes, roses, fleas and mosquitoes! All are very prolific this year. A very fair *coffee blossom* and in and about Kandy—lucky owners! The fragrant berry will be up to R15 a bushel before the end of the year, or my name is not what it is.

OLD COLONIST.

THE MANUFACTURE OF "GREEN TEA" IN PEERMAAD, TRAVANCORE.

May 26th.

DEAR SIR,—An article has lately appeared in our Indian papers copied from a Ceylon paper, greatly extolling the district of Peermaad, Travancore, as to soil, cheap labour, etc., with regard to tea culture, the result of an interview with one of the tea planters of the district; but when on the subject of "green tea" and the samples sent from "Bon Ami estate" the *name* of the gentleman to whom all the success and "kudos" of the green tea manufactured is due was some how forgotten to be mentioned in that interview

(anyway the name is not mentioned in the article). So surely it is only fair that it should be stated that "the green tea so favorably reported" on by Mr. F. F. Street was solely and entirely manufactured by Mr. Robert S. Imray (the son of an old wellknown planter in Ceylon), superintendent Bon Ami estate, the property of the late Mr. James Darragh of Aleppey. The writer of the article on "Tea Cultivation in Travancore" seems to be under the impression that all the credit of the green tea is due to Mr. F. N. Parker, whereas the samples were given to him by Mr. Imray to take to Ceylon, with the request that they should be shewn to some man of experience in tea matters. I may add green tea manufacture here in this district was never, I believe, even thought possible, till Mr. Imray started the idea; and that he has been most kind in shewing his brother planters, *free of expense*, this new process in making green tea, is surely the more reason that justice should be done him! TRAVANCORE.

THE NEW ZEALAND AND SOUTH SEAS EXHIBITION:

LETTER FROM MR. WATSON.

Kandy, May 30th.

SIR,—I beg to enclose copy of letter received from Mr. W. Watson regarding the New Zealand and South Seas Exhibition.—I am, sir, yours faithfully,

A. PHILIP, Secretary.

Dunedin, April 30th.

A. Philip, Esq., Secretary, Planters' Association, Kandy.

Dear Sir,—I wrote to you last on 13th March (press copy enclosed) and have since received your letter of 4th March. The Exhibition was closed on the 9th instant and was a success until the last. The following were gross receipts at the Ceylon Kiosk since my last account:—

Gross takings from 26th Nov. to 24th Feb. inclusive £265 13s 9d; 25th Feb., £3 9s 6d; 26th Feb., £3 18s 6d; 27th Feb., £3 8s; 28th Feb., £4; 1st March, £4 8s 3d; 3rd March, £2 7s 6d; 4th March, £3 13s; 5th March, £3 18s; 6th March, £8 15s 6d; 7th March, £3 2s; 8th March, £4 16s 7d; 10th March, £3 15s 2d; 11th March, £2; 12th March, £4 9s; 13th March, £3 15s; 14th March, £3 14s; 15th March, £6 1s; 17th March, £2 18s; carried forward £33 2s 9s, 18th March, £2; 19th March, £3·16s; 20th March, £5 7s 21st March, £2 11s; 22nd March, £4 1s 6d; 24th March, £5 2s 6d; 25th March, £2 4s; 26th March, £2 19s; 27th March, £1 15s 6d; 28th March, £2 5s 6d; 29th March, £3 10s 9d; 31st March, £3 12s 6d, 1st April, £2 0s 6d; 2nd April £2 9s 9d; 3rd April, £2 17s; 4th April, £6 2s; 5th April, £6 11s; 7th April, £8 18s 9d; 8th April, £3 17s 3d; 9th April, £4 2s 6d; 10th April, £3 16s; 11th April, £4 3s; 12th April, £5 9s 6d; 14th April, £5 11s; 15th April, £4 4s; 16th April, £4 14s; 17th April, £4 16s; 18th April, £4 11s; 19th April, £11 2s 9d; closing days £4 5s 2d. Total £466 19s 2d.

THE KIOSK.—Messrs. Drummond Bros. of Adelaide have declined to purchase the Kiosk at my figure. I telegraphed to them to make an offer, but had no reply. A Mr. Gilchrist of Christchurch is at present corresponding with a view to purchase, and the price of £50 has been named to him, for the bare Kiosk, as the lowest which can be accepted. Mr. Joubert informs me that he has secured the management of an Exhibition to be held at Launceston in December next, and he offers to arrange for efficient representation of the Planters' Association, there for the salary of £3 per week to be paid to the person appointed by him. He suggests that one of the Sinhalese natives (Jayanhamy) would be sufficient, the rest of the service to be by girls engaged on the spot at about 15s per week. He desires me to ask you to wire *as soon as possible* if you desire to be represented as above, and if you will therefore wire to the address "Napoleon Dunedin" the word "agreed," I shall inform Mr. Joubert of it wherever he may be at the time. If Mr. Gilchrist does not take the Kiosk and you decide on exhibiting at Launceston, the Kiosk of course will go there, and I shall expect the Dunedin Exhibition to be credited £50 for it. In the meantime it is being taken to pieces and will be packed and stored here.

ACCOUNTS.—These cannot be closed up for a short time yet, as there are several items to collect, but at a rough computation, I should say (counting the Kiosk at £50) there will be enough money at this end to pay all bills and servants' wages and also passage fares of the natives to Ceylon. Pending sale of the Kiosk I may however have to ask Mr. H. McKenzie of Melbourne to draw upon you for the native passages from Melbourne to Colombo. Detailed copies of accounts will be sent to you as soon as possible.

NATIVE SINHALESE.—These men wished to receive their wages here, and I have accordingly paid them as per agreements with Mr. Carlyon. Please find herewith the agreements with full payments receipted thereon.

AWARDS CERTIFICATES.—I send in charge of Jayanhamy addressed to you a tin box containing certificates as per accompanying list. Jayanhamy has been instructed to leave the box with Mr. Carlyon.

KANDYAN ARTWORK.—I regret to say that these articles have not met with the public appreciation here which they no doubt deserve, and I am of opinion that they will not fetch in this market one half the prices placed against them in the list received by me. Two small articles have been sold, and pending your instructions I have had the rest stored here.

SALE OF OTHER EXHIBITS.—The tea exhibits have been sold to the Ceylon and Indian Tea Association at an average of 1s 4d per pound in bond, and the balance of the tea sent for use at 1s per pound. The coffee samples I purchased myself at 1s per pound. These prices are higher than could be got by selling to others.

Photographs, mats, etc., are being sold by Mr. Begg. —I remain &c., (Signed) W. WATSON, Inspector, Colonial Bank of N. Z.

P. S.—Just as mail is closing I find the awards will not be signed in time to send. I shall forward them as soon as possible.—(Initialed) W. W.

TEADEALERS AND BONDED WHARFINGERS.

TO THE EDITOR, LONDON "GROCER,"

Sir,—One effect of the late "rush" to clear teas has been to show up in its worst light the manner in which the London wharfingers and bonded warehouse keepers (who have mostly made considerable fortunes out of the trade) conduct their business, for their customers the wholesale dealers, when any extra pressure arises to clear out packages quickly. I do not hesitate to say that the difficulties and delays in obtaining delivery of our own teas have been a scandal, and the confusion and block at most of the docks all this month in spite of weeks of previous warning, reflect discredit upon the warehouse keepers.

How long are the wholesale trade going to tamely submit to a state of things so injurious to their business, and to the annoyances caused by the bad management of these gentry who make their profits out of us?

Numerous cases have occurred of teas with duty paid early and in advance on the last days of April, so as to be ready for the new rate on May 1st, not being delivered until a week or ten days after, with expense of carts or vans applying daily in vain; and when clerks and clearers are sent down again and again to find out the cause, the cooly told the carmen have never applied, or that warrants have been mislaid, or that the packages are lost; or, again, perhaps some important clearing is stopped for a few pence dock-rent because, by their own default, the packages have been detained so as to run into a fresh week!

But this is not the worst, for a system of blackmailing has grown up amongst the foremen and dock workers which ought certainly to be stopped. These "dockers," who, a few weeks ago, were striking for more pay, now are not satisfied by being paid for their work, but also, in cases of urgency being required, are not ashamed to demand "beer-money," or to have their palms greased by those requiring delivery or sampling, before they will trouble to exert themselves to do the work for which they are employed. Country dealers often wonder, and write and complain of delays, but they little know the trouble it often is, even after duties, &c., are all clear, to get delivery in reasonable time.

Then, again, there is the old and absurd practice of having a general midday dinner-hour, when all dock work, however urgent, must be suspended at the busiest time of the day! and this, too, when Custom House work must be done before half-past three o'clock! Fancy going into a bank, or some big store, to do business at midday, and being told you must wait for an hour, or call again after dinner! Yet this is what our trade have put up with for long years past.

What is the remedy? 1. To make the wharfingers understand they must pay better attention to the wants and requirements of the wholesale dealers, and not merely to the importers. 2. That the evils of a partial monopoly should be kept in check by some independent competition; and the best and most practical way of doing this would be by dealers establishing a wharf and bonded warehouse of their own, and managed in their interests, instead of in that of importers and proprietors.

We know, of course, that the members of the Tea Clearing-House have agreed for a time not to encourage any fresh bonded warehouses being established, but this rather short-sighted policy is one easily terminated by due notice for the benefit of the trade. A powerful and wealthy body like that of the wholesale tea trade could easily start a company for a "tea trade wharf," and bring immediate business to support it, and thus many of the vexations and delays at present experienced would soon be remedied, and the undertaking produce a fair profit into the bargain.

Will our Wholesale Tea Trade Committee take the matter into consideration and see what can be done? They will find themselves well supported.—I am, &c.,

AN INCONVENIENCED DEALER.

London, May 21st.

COFFEE IN DIMBULA.—"The Patriarch" writes:—"What a glorious season; never in my period can I, so far as I can recollect, remember such a season. Now nearly six months' sunshine with ample moisture at periods when required! Tea flushing splendidly and wherever coffee is good it never looked more healthy than at this time, but I fear the next four months will show us our old enemy is still to the front when weather favours his developement."

KALUTARA TEA AND PADDY DISTRICT, May 29th.—We had an awful night of lightning and thunder and rain which give us 5·26: lucky it was not strong wind. It has done a lot of damage to roads and drains. We had on Sunday last service at Culloden. The Rev. Mr. Bestall came down: I am sorry the weather prevented many from coming. Since then Mr. Bestall has paid us all a visit. I am afraid he has had a very rough journey. I need not say I am sure he received a hearty welcome from all. Influenza still bad and am sorry to say labour is scarce, and regret more to hear that they are wanting more pay. I hope that no one will have to raise their wages, for the present price of tea won't allow it. I have never seen the paddy look so well, and should they get a good harvest, which I trust they will, no one will complain of paying the paddy tax: it is the very bad years of late that have been so much against them.

TEA PROSPECTS IN ASSAM.—May has again been a most disappointing month. The first few days were extremely hot with a tremendous sun, and the clerk of the weather has behaved to us very shabbily in the way of rainfall. Last year he swamped us with something over 30 inches to date, and this year he has left us thirsty and longing with something just over 12 inches, and without a single really heavy shower to record; the result being that all gardens in this district are very much behind their estimates and outturn to a similar date last year. Unless we are more favoured in June things will have assumed a really serious aspect, as the drought has now gone well on into the season.—*Englishman.*

CINCHONA CULTIVATION IN JAVA.—The report of the Director of the Java Government Cinchona Enterprise for the first quarter of 1890 is a somewhat gloomy one; for he speaks of much damage done to the plantations by wind-storms and still more by caterpillars, which are becoming a serious scourge. The only remedy seems to be close planting, and this is being carried out everywhere. The weather being favourable during the quarter, planting operations were carried out vigorously, there being a sufficiency of young plants available for the purpose. The crop of 1889 was all despatched to Tandjong Priok by the beginning of March, and amounted to 703 503 half kilograms of bark, of which 2,339 half kilos were reserved for the local military medical service. At the sales of 1889 bark at Amsterdam in January, February and March the prices averaged 9¼, 10 and 9 cents.

THE INDIAN LIKE THE CHINA, TEA SEASON and Statistics close at end of April, and a great pity we now think it is, that the Ceylon Commercial Season when altered was not made to run in correspondence; for there will be this element of confusion with our Commercial statistics for the Calendar years, that they will never agree with the Customs returns to which so many authorities in the Commercial as well as Statistical world are apt to pay special attention. It will be very awkward to have two sets of figures, differing considerably, representing the Staple Exports of Ceylon for a series of calendar years. It may not be too late for the Chamber of Commerce to consider whether they should not make their Commercial Export Season run from 1st May to 30th April, so that the Tea Statistics may be available for precisely the same periods as those of India and China and the confusion of varying returns for the calendar years avoided. A May to April season is what was asked for by the London Brokers.

BLACK WALNUT.—One of the largest specimens of Black Walnut probably ever sent to an eastern market in the log may now be seen in the timber yard of Messrs. Johnson Bros., 385 Albany Street, Boston. The tree which produced it grew near the falls of the Kenawah, in West Virginia, on the line of the Chinapeake and Ohio Railroad. The trunk, which measured sixty-four feet to the first branches, has been cut into five lengths; the butt log, the centre of which is hollow from decay, measures at the base eight feet and a half across. The diameter of the log, cut twenty-five feet from the ground, is four feet two inches, and that fifty feet from the ground has a diameter of three feet eleven inches in one direction and three feet in the other. The upper end of the fifth log, at a point sixty-one feet from the ground, where the trunk had been a good deal flattened, measures four feet one inch through one diameter, and two feet nine inches through the other. These measurements are all made inside the bark. A thousand feet of lumber have been cut from the main branches and the five trunk logs are estimated to contain 10,000 feet. The wood in the butt log outside the central cavity is beautifully curled and marked. A superficial examination of the annual layers of growth shows that this great tree has grown on the whole with wonderful rapidity and that it is probably less than 300 years old.—*Garden and Forest.*

REMARKS ON THE STATE OF BOTANY IN CEYLON,

WITH REFERENCE TO THE KNOWLEDGE OF IT IN APRIL 1843, AND AN ATTEMPT AT ARRANGING ITS FLORA AS KNOWN TO MOON AND RESIDENT BOTANISTS ACCORDING TO LOCALITY AND ELEVATION, COMMONLY CALLED GEOGRAPHICAL DISTRIBUTION OF A FLORA.

BY CAPTAIN CHAMPION, 95TH REGT.

(*Continued from page 46.*)

I have not however sat down to persuade; in all countries Horticulture and Botany are charms to but a portion of the community, but to a sufficient number to become subjects of public attention, and even to attract the notice of Government, this is the age for Botany as well as other pursuits. Kew re-established—and in the hands of the most accomplished Botanist of the day—the princely greenhouses of Dropmore, Chatsworth, Woburn Abbey, and many noble residences; whilst foreign countries are ransacked by collectors for private Greenhouses or public societies. We find the late Duke of Bedford importing from Mexico a waggon load of Cactuses, one of which an Echino-cactus weighed upwards of two cwts. and had to be carried for some distance on the shoulders of eight Indians. Another (a cactus-senilis) which some of us may have seen in England, was fourteen feet high. In Ceylon we know that the Duke of Northumberland has not been idle, he may possibly be better acquainted with its botany than our present residents. The *great Duke* himself, can boast of the best avenue of Beech trees in the kingdom at Strathfieldsaye, (better even than Sir Walter's.) It is related of him that when Loudon was engaged in the publication of his Arboretum "he wrote for permission to take drawings from some of the trees of Strathfieldsaye, the Duke mistook the signature for that of Ch. James, Bishop of London (J. C. Loudon) and supposing that the Bishop patronised the science of botany, wrote to him that His Lordship might do what he pleased with the giants of his famous avenue, except cut them down. The Bishop, we presume, must have been a good deal puzzled with this limited Church commission. Poor Mr. Loudon lost his chance." It is many years since Ceylon had attracted the attention of European Botanists. The great author of the Linnæan system with much taste and judgment, thus draws a comparison between the vegetation of Ceylon, and as it would appear that of his own native country Sweden:—"A delicious climate has granted to this Island plants of such variety and value, that scarcely any soil can vie with it, for the abundance of its aromatic productions. Whilst Pine Forests occupy our cold and sterile regions, in Ceylon the Cinnamon trees constitute whole groves, in such plenty indeed, that the inhabitants are accustomed to employ the wood for household furniture, for fuel and for cooking. Our orchards are planted with apples, pears, plums and cherries and other similar trees, but in Ceylon nothing is esteemed save the lofty Palms, among which the Coconuts chiefly afford the needful food, utensils and every thing necessary to mankind. The Caryota there yields a wine called Suri, and the Corypha or Fan Palms, extend their broad, smooth and plaited fronds, which serve for shade and shelter. They are most requisite for protection from the sun's rays, as well as from sudden showers, to the Natives, whose only garment is a scanty covering of linen. Date Palms and the superb Bananas decorated with wide spreading and glossy foliage, present in great profusion, racemes of the most delicious fruit, to say nothing of the more valuable productions with which the soil everywhere abounds, such as Mangoes, the Jack, Malay apples, Psidia Oranges, and Citrons, Cashewnuts, Averrhoas, &c. Our fields are sown with common Barley, and Rye, but those of the Cingalese receive nothing but Rice, which affords them flour and bread. Our marshes are covered with Cattle, their's with fragrant Amonum. Persicarias occupy our waste places; but with them grow different species of Pepper. In our meadows spring the Ranuncu'us, Plantains, Convallarias, and many other neglected plants; in theirs, numerous kinds of Hedysarum, Galega, Hibiscus, Justicia, Cliome, Impatiens, Amomum Myrtle, and Ricinus, besides numerous climbers, as Ipomœa, Dioscoræa Basella, Aristolochia, Ophioglosum, Phascolus Momordica, Bryonia, Vine, Cissus, Pothos, Loranthus, and Acrosticum. In the room of the meadow sweet and mints, the pastures in Ceylon are scented with Basil and the woods with Cinnamon. Everywhere occur the most precious Aromatics, Ginger, Cardamons, Galange, Costus, Arcorus, Schœnanthus, Calamus, Aromaticus, and flowers of the most exquisite color and structure and fragrance, such as Crinum, Pancratium, and Gloriosæ as well as those plants which saturate the night air with their delicious scent such as the Tuberose, (Polyanthus,) and Nyctanthus."—It was at this period that Burmann labored in Ceylon and the results were "Thesaurus Zeylanicus" a very creditable work at the period when published. Burmann lent his collection to Linnæus, who published descriptions from it, as appears from Sir J. Smith's tour on the Continent in 1793. The same author also mentions Herman's Ceylon Plants at Leyden and Copenhagen and that a copy was afterwards published by Sir Joseph Banks. Sir J. Banks seems to have been interested in Ceylon Botany, for Sir William Hooker studied in his museum preparatory to going out with General Brownrigg; unfortunately family occurrences prevented this taking place. In Wight and Arnott's Prodromus of Indian botany there is a very good account of the Indian Botanists; up to the time of Roxburgh, their works are of very little service in the present state of Indian Botany with exception of the edition of Roxburgh's Indian Flora by Wallich, which is very good. Royle, Wight and Arnott and Wallich are in India what Hooker and Lindley are at home, and we owe to them a most complete knowledge of Indian botany: all their works are most instructive. Meanwhile to return to Ceylon botany:—Moon the first Superintendent of the Botanic Gardens, established at Peradenia seems to have performed his duties in a most creditable manner. In 1824 he published a list of Ceylon Plants, which is too well known in the Island to require any recommendation; a few mistakes have crept in and many of the genera have been altered since 1824; other plants are to be added, but still it is most useful up to the present improved age of the science. He must have formed a good Herbarium, but only a few plants are now extant, so that no means are left of ascertaining the plants which were undescribed in Moon's time and consequently named by Moon—except by the Native names and they are fluctuating and not always correct where rare plants are in question.

Watson, Lear, and Normansell who succeeded Moon have done but little for Ceylon botany.

Previous to 1838 Colonel and Mrs. Walker paid great attention to Ceylon botany. Mrs. Walker had the advantage of being an excellent flower painter and her tracings of plants are considered very beautiful; their collection of plants went home to England in—1839 or—40 and is supposed to have added a very large list to our Flora.

Dr. Wight was on a visit to Ceylon in 1836: he made an excursion with Colonel Walker and

collected above 500 species of plants. After this a Mr. Nightingale collected for the Duke of Northumberland and a Mr. MacRae seems to have been in the Island: he has added to the grasses.

Mr. Bennett* on return from New South Wales visited Ceylon and has published some interesting particulars on the different varieties of the Coco Palm.

The Flora of Java is quite unknown here: the researches of Blume, Reinwardt, Dr. Horsfield and others might enable us to ascertain several of the species not indigenous to India.

Finally a Mr. Cumming brought an immense Herbarium of plants for sale from the Indian Archipelago about 1840 to London. A list of the Ferns have been published and probably contains many of the Ceylon species.

From the preceding remarks it will be observed that whilst in 1842 the state of knowledge of botany in Ceylon was at a very low ebb, materials had gone to England which may have enabled botanist's in England or India to form a very good estimate of our Flora, and indeed it appears that Lindley has drawn very largely on Ceylon for Orchideous Plants, although our present list in Moon is very limited. The Gardens are possessed of drawings of a very beautiful series of Ceylon plants which canno tall be ascertained by the scanty references to tobtained from its indifferent library. Such is the state of our knowledge up to April 1843. But I have here the pleasing duty of remarking that a few months may see a very improved state of our knowledge, as the Government has most liberally come forward in purchasing books of Modern reference which have already arrived and will shortly be open to the public. It is also expected that the labours of Colonel Walker and the knowledge of Indian botanists will shortly be made known in Ceylon and it is in contemplation to publish a corrected list of plants indigenous to the Island. Possibly some years may elapse ere our knowledge is very complete, but it cannot fail but that yearly much will be added to our Flora.

Botany is by many people considered a very dry study, and undoubtedly it is the grammar to horticulture, agriculture and higher branches of a knowledge of vegetation, usually allowed to be important in the daily routine of life. To those interested in it as a pursuit, it opens a very curious field of observation in the structure of plants and for many other considerations; and those who have mastered its difficulties will turn their attention to all the higher branches of the subject with singular success and unravel many of the mysteries of agriculture and commerce. I will briefly give a few instances: Cinnamon and Cassia have been known as articles of commerce from a very early period, as far back as some of the earlier Greek Historians. As such our merchants are perfectly acquainted with their peculiarities, but not so with the sources from which produced. It is true that the Dutch had cultivated the true Cinnamon plant, and so it was known how we got Cinnamon and it was certain that Cassia came both from Ceylon and India and must be known to those who had prepared it for the market. Now just about the period that Cinnamon had begun to fall in value, people in England began to ask what Cassia was, some said it came from a different tree from that producing Cinnamon, others supposed it to be an inferior produce of the Cinnamon tree, the tree allowed to grow old, or the bark of branches of a different year's growth. Of course the old Dutch writers were referred to and then it appeared that certainly there was a Cassia tree, as well as a Cinnamon tree, but when botanists began to look further, they found that scarcely two botanists agreed about the description of the Cassia tree although several had professed to describe it every correctly. Botanists in England began to fancy there might be many varieties of Cinnamon or of the true Cinnamon; so they got specimens of Cinnamon and Cassia and all the information they could on the subject, but just sufficient to leave a great deal to be said on both sides. In 1838 the question was at last taken up by the Madras Government and they went to work by obtaining specimens of Cinnamon and Cassia and reports upon them from the Government Agents of places where these articles were exported and were also so assisted by Colonel Walker and the Ceylon Government. The reports were very conflicting and unsatisfactory, but fortunately Government had always insisted on Specimens being sent and these were placed in the hands of Dr. Wight. Dr. Wight and other botanists were aware that a great many species of Cinnamon existed and many of these had been described by either Roxburgh, Blume or the Brothers Nees ab Essenbeck; so that although Dr. Wight could not in all instances determine the species sent, because they might be deficient in flowers or fruit, as the Government Agents might not in all instances be up to the requisites of a dried specimen for an Herbarium, yet in many instances he did discover what the species of Cinnamon was as described in books or as new species, and hence he at last was able to settle the question very determinately, and Cassia is found both to be an inferior preparation of the true Cinnamon tree and also the better portions of bark of a great variety of Cinnamon trees of different species and which do not yield true Cinnamon. Also that inferior Cinnamons are produced in various parts of the Indian Coast and these are of species differing from the true Cinnamon of Ceylon. Dr. Blume, enumerates in Java eleven species of Cinnamon-yielding aromatic barks and several of these are said to vie with the very finest Cinnamon of our market. Now I may here observe that Botany is certainly of some use. For when all the species shall have been described and the English merchants are satisfied that there are other good Cinnamons besides the true Cinnamon, many of the underrated Cinnamons will be estimated at their proper value, and if a Coffee Planter should find a good deal of Cinnamon on his estate and can discriminate his species, he will be aware of its exact value whether as Cinnamon or Cassia by ascertaining the name.*

A great many other instances might be cited with respect to our Medical Pharmacopeia. Drugs are purchased at a very high price from foreign countries, when it is probable that other species in our own Colonies are possessed of similar qualities, which might certainly supersede the more expensive articles, where indigenous. Sarsaparilla is one and various species of Convolvulus of this country might produce jalap without resorting to the Mexican or true jalap. It is only by a botanical knowledge of species that we could impart such knowledge or discovery to the public.

Gamboge is another article of commerce and there are Gamboges of various qualities produced from different trees which require botanical discrimination. It created a good deal of attention a few years previous and Colonel Walker was interested in the enquiry and in discovering the Ceylon species. Dr. Graham has at last settled the question deter-

* Dr. George Bennett, still living in Sydney.—ED. T. A.

* When Mr. A. M. Ferguson examined Weywelhena, Uva, in the early months of 1841, he reported that the undergrowth consisted largely of cinnamon, which had evidently been habitually cut for spice.—ED. T. A.

minately and the true Gamboge plant is found to be far more rare than the tree commonly supposed to produce the Gamboge of commeree. The latter is very rare and I believe not even indigenous to Ceylon, whilst the former (a common tree) produces a Gamboge which would be scarce saleable.

Some good articles have been written in the periodicals and newspapers of our Colony on articles of commerce or culture and it is reasonable to suppose that the Agricultural Society will do much for Ceylon on such points. It is also to be expected that Horticulture will extend thro' the exertions of individuals and that our Peradenia Gardens on the new footing will yearly add to the taste for improving fruits and vegetables and the introduction of foreign productions. Meanwhile it seems very desirable to ascertain the really indigenous Flora of Ceylon and the peculiar features of certain localities. With this view I shall lay before the public a few hints towards the Geographical distribution of our Flora, premising that it has been made up from a very short experience and from knowledge, derived, from my want of modern works of botany, from the older authors up to the time of Moon and the Prodromus of Wight and Arnott. As this is about the amount of knowledge of the usual run of residents in the Island, it may serve as a groundwork until a better article on the subject from some more experienced hand shall have been published.

Geographical Division of Plants in Ceylon.

Part of the trees and plants in Ceylon (and these the most common in occurrence as forming the mass of vegetation) are found nearly all over the Island in favorable situations. Being of hardy growth few are peculiar to Ceylon but extend over India and the neighbouring Islands, of such plants I have made a selection in Table 1st, it includes many of the handsomer trees and shrubs of Ceylon. Many of these must be familiar to every resident. The Soursop tribe, Country Almond, Guava, Jamboo, Coronet-tree, Ceiba or Cotton, Thespesia, Indian Olive, Pumplemos, Lemon and Orange, Tree-spurge, Coral, Sappan, · Peacock-flower, Horseradish-tree, Bauhinia, Cashew, Mango, Mulberry, Banyan, Jack, Breadfruit, Cassia, Cinnamon, Chaste trees, Teak, Forbidden fruit, Temple-flower, Palmyra, Betle-nut, Jaggherry-tree, Coco-Palm, Plantain, Screw-pine, Indian rubber tree, Sago, Papaw, Bamboo, Tamarind. Castor, Annotto, with trees, shrubs and flowers of less speeious appearance and many weeds In some instances they have been introduced into hothouses in England, but not universally—for what is most common in tropical climates is sometimes neglected to be sent home and of this there is a very curious instance in the Banyan. No foreign production has been oftener quoted than the Banyan both in verse and prose by English writers and it has been well described by both Cordiner and Roxburgh some thirty years ago, yet two of the most popular writers of the day Lindley and Loudon have confused it with the Bo-tree (Ficus religiosa) a very different species, and Moon in his catalogue with Ficus Benghalensis, it really being the Ficus Indica and remarkable for its vast rooting branches, in which peculiarity it differs from both those other species of Fig. Major Forbes and the writer having sent Sir W. Hooker sketches of the Banyan under the name of Ficus Benghalensis, Sir W. published a detailed account of this tree, correcting the above errors, and stating that he suspected that English Herbaria are miserably defective in specimens of the true Banyan. His own, rich in the productions of our Eastern possessions, had not a single specimen in March 1841 and Dr. Arnott had but one indifferent specimen. It is called Manuga in Ceylon. On the subject of Banyans I will pass over Southey's beautiful description in the curse of Kehama and Colonel Sykes' famous tree in the Poonah collectorate which has 68 stems descending from the branches and capable of giving shade,* but I will mention a circumstance which has lately struck me as curious. Somewhere in the Asiatic Transactions Sir Wm. Jones says "it is true that minute ants are hatched in the ripe fruit of the Udumbara (or racemed Fig) whenee it is named gamtephale; and the Pandits compare it to the mundane egg"—now although I have always looked upon Sir W. Jones as a very enquiring personage and very clever man, I in this instance at once set him down as following the theories of the school of 1552, who believed that Insects were *spontaneously produced!* and therefore not very much astonished had noted his opinion as rather curious with three of the accompanying marks (! ! !) exactly to denote my own opinion on the subject. We have the racemed Fig in Kandy and I had seen the fruit, but I must say I never took any steps to investigate Sir Wm. Jones' theory. However the other day I happened to bring home some of the fruit, of the Carpenter-fig. which I found growing on the root, and on opening some I found they contained nearly a tea spoonful of pure water, which is a curious instance of vegetable economy, and on opening another I discovered about a dozen ants inside. Now there was nothing remarkable in this had the fruit been penetrated, but on search I was obliged to confess that I could not discover any opening in any part of the fruit and consequently it is no wonder that Sir W. Jones thought the Pundits really correct. How they entered I shall leave you to determine, but suppose that the economy of the parent Insect is to introduce her eggs when the fruit is at a very early stage of growth, and that afterwards with the growth of the fruit the fissure becomes entirely obliterated. It is evident that the supply of water together with flowers and seed (all which are produced inside the fruit) are sufficient to support the ants, who are a very thirsty race. The Cingalese, who have naturally rather a turn for botany and the appropriation of all sorts of trees and leaves to medicine and curries, believe that Banyans have no flowers, and although you may not have sharper eyes than they have and can hardly point them out in the tree, a Botanist will shew a trick worth two of theirs, for on quietly turning the fruit inside out and attached to the inner skin you will find either the flowers or the seed which they afterwards turn into.

To return to the distribution of the Ceylon Flora, many of the trees and plants commonly spread over the Island are of great service and utility to the Natives and Europeans either as timber, fruits, medicines, dyes or economical purposes. In many instances the properties are known and have become available, but in other instances from what we read of respecting the use made of these trees and plants amongst certain tribes on the Continent of India or Burmese Territories it may be conjectured that they have been overlooked or neglected —through the spirited exertions of individuals in the Company's service most of these economical vegetable productions have been described under scien-

* Sixty-eight stems must be a mistake, as our comparatively youthful tree, near the Cinnamon Gardens, has hundreds of descending shoots. The concluding lines of Southey's description are :—

"So like a temple doth it seem, that there
A pious heart's first impulse would be prayer."

—Ed. *T. A.*

tific names and descriptions and consequently when our Ceylon Flora is botanically named, we shall without difficulty avail ourselves of the experience thus to be acquired. The greatest exactness is often requisite in describing plants of common occurance to prevent error. For instance much of the native steel of India is smelted by the use of a species of Mudar plant, the Calotropis gigantea (a common plant in Ceylon) and its root and bark is said by Lindley to be a powerful alterative and purgative and of importance in cases of leprosy and elephantiasis—but later researches prove the Mudar plant to be a different plant viz. the Calotropis procera which is not known in this Island and it seems very doubtful how far the Calotropis gigantea (or Curl flower) may share the qualities of the real Mudar plant, I think it was Dr. Wallich who published remarks on the real Mudar plant being the Calotropis procera. On the other hand Mr. Wilkinson in Feby. 1839 made known the native method of smelting steel, the ore used was magnetic oxide of iron 52 to 48 of quartz and was reduced in four hours by a furnace, to which was used charcoal fuel. Afterwards being placed in a crucible with dried wood of the Cassia auriculata and green leaves of the (Asclepias) Calotropis gigantea and a certain process used excellent steel is produced. If Mr. Wilkinson has made no mistake in this plant there seems no reason why the natives here should not convert old iron into steel with facility, both plants being of common occurrence on the Coast. It is not the intention of this paper to enter into the economical uses of the vegetable Kingdom of the Island. A very bulky volume might be produced on the many valuable resources that exist and that are known and made use of by the natives of other countries. I restrict myself to the botany with casual remarks to shew to how many objects of interest, use, or curiosity it will lead. Passing from Table I. we come to the plants of the Maritime Provinces or sea coast of Ceylon. It seems to have been partially explored at Trincomalee, and Mr. Moon has visited Negombo, Putlam and Jaffna, but so very little is known respecting their Floras, that we are really inclined to look upon them as unexplored botanically, so that in reality Table 2 is merely that part of the coast extending from Colombo towards Galle, and it is supposed that the general features will extend to the whole coast of Ceylon, but will vary in certain localities. Putlam for instance having saltwater lakes will have its peculiar characteristics in such localities, and Jaffna seems to differ considerably in climate and productions from the southern portions of the coast. In the neighbourhood of large rivers, it is possible that the productions of a more hilly country may casually occur, as transported in their seed vessels during floods and the monsoon season. However theoretical this view may at first appear it is known to be practically correct to a small extent and that in this way volcanic Islands and Coral reefs become vegetated in the Ocean and Islands thrown up by the embankment of sand in rivers. In connection with this subject, Lyell mentions Geology vol. II "Fruits indigenous to America and the West Indies, such as Mimosa scandens, the Cashew-nut and others" (all natives of Ceylon,)* have been known to be drifted across the Atlantic by the Gulph stream, on the western Coast of Europe, in such a state that they might have vegetated had the climate and soil been favorable, among these the Guilandina Bonduc, a leguminous plant, is particularly mentioned, as having been raised from a seed found in the West Coast of Ireland." The Guilandina Bonduc is very common all over the interior of this Island. But altho' this is a proof of the very great distance that seeds may be floated without destroying in every instance the vegetating powers, it does not seem sufficient for our purpose, and so I shall quote Mr. Darwin's description of the Keeling Lagoon Islands. He says "I will now give a description of the Natural History of these Islands which from its very paucity, possesses a peculiar interest. The Coconut tree at the first glance seems to compose the whole wood; there are however, five or six other kinds, one of these grows to a very large size but, from the extreme softness of its wood is useless; another sort affords excellent timber for shipbuilding. Besides the trees the number of plants is exceedingly limited and consists of insignificant weeds. In my collection, which includes I believe nearly the perfect Flora, there are twenty species, without mentioning a Moss lichen and fungus. To this number two trees must be added; one of which was not in flower and the other I only heard of. The latter is a solitary tree of its kind in the whole group and grows near the beach, where, without doubt, the one seed was thrown up by the waves. I do not include in the above list the Sugar Cane, Banana, some other vegetables, fruit trees and imported grasses. As these Islands consist entirely of coral and at one time probably existed as a mere water-washed reef, all the productions now living here must have been transported by the waves of the sea. In accordance to this the Flora has quite the character of a refuge for the destitute. Prof. Henslow informs me that of the twenty species, nineteen belong to different genera and these again to no less than sixteen orders." Darwin also mentions again respecting another of these Islands. "The following seeds are supposed to be driven by the N. W. Monsoon to New Holland and from it to the Island by the S. E. trade wind. The Kimiri of Sumatra and Malacca, the Coconut of Balei, the Dadap of the Malays, also masses of Java Teak and yellow-wood and red and white Cedar and the blue Gum tree of New Holland. All creepers retain their vegetating powers, softer productions as the Mangosteen do not germinate." In the tropics where certain trees and plants grow over the margin of the Ocean and the young saplings often vegetate in the sand and mud both of it and of rivers many may be supposed to be floated after storms far from their place of birth, whilst more inland productions are frequently transported by the agency of birds, or such as have winged seeds by the power of the winds. I can myself give what I believe to be an example of the agency of the Mahavillaganga. On the top of Adam's Peak and about Nuwera Ellia is found in abundance the gigantic Lobelia excelsa, a very handsome plant attaining the height of 12 to 15 feet. It is a mountain plant, excluded from the jungles, but delighting in bare elevations and the sides of rocky streams. Its nearest approach to the low country is I believe Pusilawe and Ambegammie, growing in the latter country in great abundance on the banks of the River. A few months ago in passing the Trincomale ferry I observed this plant on the steep bank overhanging the river and I have little doubt but that the seed had been laid after one of the monsoons when the river is much swoln and the plant in seed. After some experience of the Kandyan country I am able to say it is the only plant of this Lobelia growing in the neighbourhood. Upon the whole it seems probable that several plants and

* If "native", is used in the sense of indigenous, then the cashew is certainly not native. It cameto Ceylon and India, like the pineapple, chilli and so much else, from the western hemisphere.—Ed, *T. A.*

trees may thus migrate to a colder climate, but they are constantly checked in growth where circumstances and climate are unfavourable by the mass of vegetation, hence only a certain number of hardy plants will succeed. The same may be said of plants introduced by the Agency of man. Those of European growth rarely succeed in naturalising themselves in the low country, but South American are in many instances perfect weeds. Asclepias Curassavica would really be believed to be an indigenous weed, had it no native name and many of the productions of our gardens will be found in the same neighbourhod wild. Again at Nuwera Ellia the Cape Gooseberry, (Physalis flexuosa) originally introduced, has spread with the greatest rapidity and altho' a weed contributes to the scanty resources for cookery in that part of the mountains. In every uncultivated country plants best adapted to the climate of the place and soil will prove the more hardy, and will supplant the more delicate species. Thus in ascending mountains, vegetation will constantly vary first from changes of strata and secondly because the atmosphere becomes colder as you ascend; but there are other causes—Vegetation depends much upon effects of light and solar influence. Leave a barren gravelly soil to itself and it will first be covered with sedge and grass, but when once weeds have effected a footing many of these grasses will disappear, Next will come under shrubs and creepers, so that the cleared space is again converted into jungle. Lastly should trees also spring up, by the time they have shaded the under shrubbery from the effects of the sun's rays, it will have materially altered in character. From such causes there must be a constant change of vegetation in mountainous countries and also in the lower tracts, but more especially in the former, I have been informed by Coffee-planters that after clearing jungle many plants and shrubs spring up which were not previously known in the Forests and it is easily accounted for on those principles. I have myself Pavetta latifolia from cleared Coffee land, after in vain searching for it in the neighbouring jungle.

WYNAAD PLANTING NOTES.

COFFEE AND CINCHONA.

The crops are a failure with very few exceptions. This is duo to the unusual amount of rain, which, coming just when it should not, destroyed the blossom so that very little indeed of it has set. This misfortune was later on followed by another, in the shape of hail storms and hurricanes, so that trees without a berry on them are with a few exceptions, the melancholy order of the day. Of course there has also been any amount of leaf disease, and any amount of this to follow. The appearance of the trees is splendid (just now) for *next* year, the extraordinary early showers having forced forward an enormous amount of new wood. What will be the effect of this for next season, remains to be proved. Weeds are rampant and hardly a cooly has come in. Influenza and cholera are so bad in Mysore that the maistries declare they cannot make up their gangs, in which case we must bid a fond farewell to our advances and our hopes of planting up new clearing. Influenza has also been pretty bad here, but not equally so in all places. The Chermas have suffered most, and curiously enough the locals, Moopas and so on, have very generally escaped. A neighbour graphically described his labour supply thus: "All my coolies are sick except six, and these are chiefly employed in digging graves for the rest!"

But we do not altogether despair. I think I have more than once commented upon the cork-like nature of planters. Fortune is amazingly fond of popping us under water, but somehow we always come up again, and though leaf disease and the elements have done their best to annihilate us this year, we can look at the "new wood," and congratulate ourselves on possibilities for next. It may even do the trees good to have a rest. At the same time it behoves us to look around for more strings for our overstrained bow. Liberian, is first favorite just now, and many experiments are being made with it, and good results are reasonably expected, in spite of the adverse criticisms of our Ceylon brethren. We, however, argue that it was bad management on their part which was more to blame than the Liberian itself. They acknowledge to planting it in the open, topping and pruning it, and otherwise treating it as we used Arabica long time ago; moreover they were not sufficiently particular in the selection of the seed. Our short experience goes to prove that Liberian must be neither topped nor pruned, and that although there *are* many varieties capable of getting leaf disease, but *one* exists which has hitherto defied the enemy. Time of course can only show if this will be the case when the Liberian is planted in large quantities. But no one can deny that it is certainly at present much more hardly and easy of cultivation than its Arabian brother.

We hear of projects for opening old land for tea on several estates where coffee and cinchona have been making a rapid exit. It is evident that tea grows well here, as proved by ocular and financial demonstration, and there is no reason to doubt the same results in other parts of the district. The working it is the chief difficulty, as just when the principal flushes are on the coolies have departed to their country, and labour is exceedingly difficult to obtain. And what am I to say about cinchona. Ichabod! Ichabod! The succirubra is suffering very much from canker, or some mysterious disease, apparently inexplicable. A great authority has lately come amongst us, who says the trees chiefly want rest—(like the coffee perhaps) and that we should only shave them *once in three years or so*. A very good practice doubtless for Government, which, happily for itself, does not depend on its plantations; but a poor look out for us, who evidently do. In the meantime succirubra is taking the matter out of our hands, and retiring into a blessed nirvana of its own. The ledgers seem inclined to fight it out, and the shaving so far has done them no harm. And finally, I will conclude by bracketing our condition after the manner of Robinson Crusoe when things were not very brilliant with him, and taking comfort thereby:—

No crop	...	High prices, and heaps next year.
Leaf disease	...	Liberian.
Canker	...	Tea.

So up come the planters—Heading the list of good things, and its no use for Dame Fortune to try and drown us out, yet a while at least.—*Madras Times.*

NOTES ON PRODUCE AND FINANCE.

THE SIZE OF TEA CHESTS.

The cry in the Lane is that some planters in India and Ceylon do not appear to pay any attention to the sizes of the chests or half-chests in which they pack their teas. The ordinary custom of the trade is to consider a chest as holding about 100 lb. of tea, and a half-chest as holding about 60 lb. It is pointed out that packages holding less than these weights are not so readily saleable, as a wholesale dealer, when he thinks he has sold say a dozen chests holding jointly 1,200 lb. is disappointed when he finds he has taken up his time in selling 900 lb. only. A large proportion of Indian and Ceylon half-chests of tea hold only from 40 lb. to 45 lb. of tea, the chests only 75 lb. to 80 lb. This involves an expenditure of much more wood in proportion to the weight contained than is at all necessary, more freight on the needless wood,

and considerably higher proportionate dock charges, as will be seen in studying the scale. These intermediate packages are also of not the slightest benefit to the retailers, who frequently have to make troublesome enquiries as to the weights and tares of parcels, now that the trade custom is depsrted from of boxes representing about 20 lb. of tea, half-chests 60 lb. and chests 100 lb. Larger sizes for either of these classes would also be objected to, though to a lesser degree, as they might be too heavy for the smaller buyer.

TEA RETAILED AT A SHILLING.

The competition amongst retail tea dealers is going on so merrily, that the question when and where it will stop becomes an important one. This is the description of the state of things in Wales sent by the correspondent of a contemporary:—"Any retailer, whether he does his business in a village or town in the principality, in an out-of-the-way corner or in the leading street, will tell you that tea above 2s per lb. remains a "dead stock" on his premises. There was, it is true, a period in the history of the retail trade in Wales when 3s was the average price paid for tea by the people, but now a large percentage of the people do not pay more than 1s 4d for their tea, and this is not to be wondered at when we find almost in every town 'the finest tea in the world' advertised at 1s 10s and 2s per lb. If the 'finest tea in the world,' as our large retailers inform the public can be bought at 1s 10s and 2s, one can hardly expect the public to go in for a high-priced article. The manager of one of the largest retail businesses in South Wales informed me, in reply to a question, that they sold more tea at 1s 4d than at 1s 6d, 1s 8d and 2s combined!—the one at 1s 4d being closely followed by a tea they retailed at 1s per lb." The tea retailed at 1s per lb. must be a refreshing and invigorating compound.

INDIAN AND CEYLON TEA IN AUSTRALIA.

The *Sydney Daily Telegraph* in a long article on the subject of Chinese *v.* Indian Teas in Australia says:—Indian and Ceylon planters are now making determined efforts to win this (the Australian) market, too, from what they are pleased to call the "post and rails" of inferior teas chiefly imported at present. Their efforts, at any rate as far as New South Wales is concerned, would seem to be meeting with some degree of success. Thus, out of a total import of tea in 1887 of 6,518,695 lb. only 161,584 lb. or 2 5 per cent. came from India or Ceylon. Next year 7,461,621 lb. were imported, 426,383 lb. or 5 7 per cent. being from the countries named, while in 1889, 549,535 lb. of Indian and Ceylon teas arrived, being 8·1 per cent. of the total importations of tea for the year. The significant changes which are taking place in the tea trade cannot fail to be of interest to Australians, for perhaps no other people in the world are to an equal extent tea drinkers. How deeply concerned the inhabitants of these Colonies are in all that affects the tea trade will be readily understood when it is stated that here the average consumption of tea per head of population is no less than 121 oz. per annum, as compared with 73 oz. in Great Britain, 21 oz. in the United States of America, and 1 oz. in France and Germany. Any changes, therefore, which bring to the market a cheap tea of good quality will be welcomed.

THE PREPARATION OF CEYLON TEA.

The *Grocer* calls attention to what it terms "an important defect in connection with the preparation of Ceylon teas," which has "just been discovered by the import trade," who are under the impression that this article is but imperfectly cured by the growers before it is shipped to England, and the consequence is that its commercial value is considerably less than it would otherwise be if tea were made as nearly perfect as possible while it wss in the factory near where it was grown. The chief complaint is of the overfiring of these teas, which by being deprived of their best preservative qualities are rendered more liable to depreciation, and consequently are less appreciated by those dealers who would prefer to buy them for storing away rather than for immediate use. Messrs. I. A. Rucker and Bencraft, Mincing Lane brokers, in their circular of the 15th inst., speak very strongly on the subject, where they say that "we feel called upon to warn our readers against a practice that has been in evidence lately, that of incompletely withering and partially fermenting teas, to give what is supposed in some quarters in Ceylon to be 'grip' or 'point' to teas which otherwise would be good thick coloury useful qualities. The consequence is that a good many parcels have come forward with a very mixed infused leaf, green and undesirable. These teas no doubt have a character of their own, and may here and there be useful for blending. They can, however, for this purpose only be used sparingly, for the incomplete withering and short fermentation cause an absence of 'colour' in cup. The trade don't like it, and the ultimate result will be loss to the planter. We are still of the same mind as we were when we wrote three years ago, that one general fault of Ceylon teas is that they are on the whole over-fired, and that this partly accounts for their non-keeping qualities." This "general fault," says the *Grocer*, is indeed a serious one, and ought certainly to be remedied without delay. There are persons, however, who have doubted the truth of this charge of defective curing in the manufacture of Ceylon teas, and have refused to be convinced of the alleged want of skill and judgment in preparing the different kinds for this market. To satisfy the minds of these people, and place the question beyond dispute, we are also informed by the same authority that last year it was determined to try an experiment for the purpose of ascertaining which of the two sorts of tea were really preferred by the trade here, the "over-fired" or the "underfired;" and accordingly instructions were sent out to Ceylon to prepare a special invoice for sale, one part to consist of tea less fired than the other, and the remaining half to be treated in the same way as heretofore. This plan being adopted, "underfired" teas on their arrival in London were pronounced to be 2d to 3d per lb. better than those that were completely or, as it is termed, "over" fired. Further than this, the samples were carefully stowed away and sealed up for twelve months, and upon being opened and tasted the under-fired teas in each case retained the same advantage over the fully-fired portion, both with respect to their excellent keeping qualities and their colour in the cup. Nothing is easier to understand than that a delicate article like tea, when fired till it is extremely dry, is more apt than ever to absorb every kind of moisture with which it may come in contact, either in the steamer afloat or in the warehouse ashore, and if so, can it be the least surprising that deterioration should set in directly the tes is turned out of hand? It is well known that in firing their teas the Chinese do not extract the last drain of moisture from the freshly gathered leaves, but apply the heat so judiciously as to preserve all the principal virtues of the tea without impairing some or destroying others; and if there are still any individuals who doubt the efficacy of the method just described in giving the quality of the tea a more lasting character, let them bear in mind that, although China teas are none of the strongest, they will for years keep close to their original flavour and condition, even if they do not actually improve by being kept in reserve until they are thoroughly matured. The *Produce Markets Review* on the same subject says:—Complaints as to the falling off in the quality of Ceylon teas are, however, now extremely general, and it cannot be too strongly impressed upon planters that prompt steps are necessary, either by refraining from weakening the trees by overplucking, or by judicious manuring, or other means, to maintain these teas in the high estimation in which they have been held by the public. A great deal of this falling-off in quality is said to be due to the custom of under-fermenting and over-firing, which reduces the sap, and produces thin flavoury teas, very liable to rapidly deteriorate in quality. It is the thick juicy teas which have made the present reputation of Ceylon growths, and planters should remember this.

TEA AND COFFEE FOR THE PUBLIC.

"Why," it was asked on Tuesday by the *Daily Telegraph*, "on these great holidays (*videlicet* Bank holi-

days) is so little provision made for the supply of tea, coffee, and light refreshments." The enquiry has received a remarkably prompt reply from the pecu liarly authoritative voice of Messrs. Spiers and Pond. That eminent firm of refreshment contractors have given a very plain and pertinent answer to the question of the *Daily Telegraph*. That question, say Messrs. Spiers and Pond, is not difficult to answer. "The great general public will not, and do not, when taking their holiday patronise in any appreciable number the places devoted to the supply of tea, coffee, and light refreshments only." It is sad, but it is so. And of the fact that it is so Messrs. Spiers and Pond have had very practical proof at the Royal Military Exhibition. There they have erected two large pavilions, a temperance and an intemperance pavilion, with the result that, while the working expenses of the two are exactly the same, the temperance pavilion only does about one-sixth part of the trade which falls to the share of its rival. Moreover, the tea and coffee tents of Spiers and Pond at the Zoological Gardens, which were specially commended by the *Daily Telegraph*, were chiefly crowded on account of the bottled beer to be obtained within them. The experience of Messrs. Bertram and Co., of the Crystal Palace, appears to be the reverse of that of Messrs. Spiers and Pond. They write:—On the question mooted by Messrs. Spiers and Pond in their interesting letter as to the consumption of non-intoxicating drinks by the people on days when they most do congregate, such as bank holidays, we think it will be of interest to state that our experience at this present does not coincide with that of your correspondents. Whether it is due to the conditions of the Crystal Palace or the facilities that are given there for the easy practical supply of non-intoxicants, the proportion of money received in the refreshment department on such occasions for tea, coffee, cocoa, milk, aerated waters, and light refreshments is two-thirds of the entire receipts, a notable increase on the one-sixth calculated by our friends.—*H. and C. Mail*, May 30th.

"KEW BULLETIN."—The June number, now before us, contains an article on compressed or tablet tea, dealing with the methods of its manufacture at Hankow, and at Chungking in Thibet. Timber trees of the Straits Settlements forms the subject of another paper. It contains much useful information on a great number of different species, giving the weights of a certain number of cubic inches, and of a cubit foot of each and native names of the trees. Cotton in West Africa forms the subject of another paper.—*Gardeners' Chronicle*, June 14th.

SUBSTITUTE FOR IVORY:—A commercial reportere, writing from Sheffield, says:—"The hulk of thy ivory sold at the periodical sales finds its wae here, and enormous quantities are used in thd cutlery and silver trades. The growing scarcity an-ever-increasing cost of ivory has, however, compelled manufacturers to turn their attention to the production ef various substitutes. One of these is celluloid, and thousands of tons of this material is annually worked up in Sheffield. One firm alone who made a speciality of this article last year, sold upwards of 1,800 dozen table-knives with ivory-grained celluloid handles. Great improvements have been made in the manufacture of this material recently, and certainly the prejudice entertained against it is not shared by Sheffield cutlery manufacturers, who boldly assert that it is superior to ivory in some respects, although it only costs about one-sixth the money. No amount of heat will cause combustion unless the celluloid is brought into direct contact with flame It stands hot water better, and retains its beautiful creamy polish longer than ivory, for which it seems to be a really perfect substitute so far as Sheffield trades are concerned."—*O. Mail.*

COFFEE IN THE KAREN HILLS.—A contemporary says:—"Among the attempts already being made to start the tea and coffee industries in the hilly districts of Burma, the Nancho estate in the Karen Hills seems to promise well. The coffee grown on this estate has been found to be of excellent quality and has sold at good prices, and tea could also be produced in paying quantities but for the great scarcity of labour which at present exists. In the early part of last year the prospects of the coffee crop looked remarkably bright but a calamity of an extraordinary and unforeseen kind nearly wrecked the small plantation. This was nothing else than an invasion of travelling rats, which in two nights nearly stripped all the trees of their fruit, cutting off the shoots and small branches and leaving the trees to all appearance as if severely pruned. The rats appear to have been animated purely by a spirit of destructiveness, for the fruit of the trees was untouched, but as the fruit was then only half-grown the loss was very great. The ultimate yield was only 5,400 lb. as compared with 12,000 lb in the previous year. It would be interesting to have some particulars about these migrating rats, and Mr. Cotes would do well to direct his attention to the subject, as the plague seemes to be an entirely new one. Fortunately the trees on the Nancho estate have recovered rapidly, and the blossoming this year has been abundant and has set well, so that a large crop is expected."—*Pioneer*, May 22nd.

CEYLON EXPORTS AND DISTRIBUTION 1890.

COUNTRIES.	Coffee cwt. Plantation	Coffee cwt. N'tive	Coffee cwt. Total.	Cinchona. 1890 Branch & Trunk lb.	Tea. 1890 lb.	Cocoa. cwt.	Cardamoms. lb.	Cinnamon. Bales lb.	Cinnamon. Chips lb.	Coconut Oil. 1890 cwt.	Coconut Oil. 1889 cwt.	Plumbago. 1890 cwt.
To United Kingdom ...	38723	100	38823	3992315	23053500	6516	101920	394539	149614	3402	57070	66899
" Marseilles ...	125	...	125	12500	145	30	...	43900	2800	...	...	...
" Barcelona ...	...	...	...	...	...	...	...	22000	...	...	...	...
" Genoa ...	12	...	12	...	950	...	...	35725	11424	696	908	...
" Venice ...	71	232	303	70412	409	...	...	4000	11200	...	...	...
" Trieste ...	7825	...	7825	252	1130	...	...	3900	8848	3490	3777	...
" Odessa ...	32	...	32	...	15	...	...	...	...	99	2211	...
" Hamburg ...	296	...	296	...	26814	768	1131	126300	52772	3304	3098	19617
" Antwerp ...	12	20	32	81057	115	...	...	7000	5600	...	1492	9409
" Bremen ...	18	...	18	...	9549	751	...	14606	...	...	...	3428
" Havre ...	...	100	100	...	...	...	...	10000	...	...	4578	...
" Rotterdam & Amsterdam	3	...	3	21384	...	55	...	...	11200	10	...	1616
" Africa ...	16	...	16	...	17595	...	...	5000	...	...	...	...
" Mauritius and Eastward	153	168	321	...	22024	498	...	7500	...	29951	...	...
" India ...	719	708	1437	...	53122	...	80528	5000	...	35579	7607	..
" Australia & New Zealand	4525	828	5353	...	1043184	1	40	2260	...	1029	1737	242
" America ...	1755	...	1755	51409	93003	1389	617	50728	...	15028	62726	80253
Total Exports from 1st Jan. to 3rd July 1890	54285	2166	56451	4229329	24321555	9408	184236	732458	253458	92588		181464
Do 1889	36067	3799	39866	4933965	17850314	8895	157804	1148739	332154	145204		224869
Do 1888	79513	3316	82928	6295555	11197327	8982	160584	619693	358267	166524		109797
Do 1887	115049	5169	120276	6641744	6076164	12667	184560	445064	134736	115431		114377

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From Lewis & Peat's London Price Current, 5th June 1890.)

FROM MALABAR COAST, COCHIN, CEYLON, MADRAS, &c.	QUALITY.	QUOTATIONS.
BEES' WAX, White ...	Slightly softish to good hard bright ...	£7 a £8 15s
Yellow ...	Do. drossy & dark ditto...	95s a 105s
CINCHONA BARK--Crown	Renewed	3d a 1s
	Medium to fine Quill ...	4d a 9d
	Spoke shavings	2d a 9d
Red	Branch	1d a 3d
	Renewed	2d a 1s
	Medium to good Quill...	4d a 9d
	Spoke shavings	2d a 5d
	Branch	1d a 3d
	Twig	1d a 1½d
CARDAMOMS Malabar and Ceylon	Clipped, bold, bright, fine	1s 6d a 2s 9d
	Middling, stalky & lean	10d a 1s 6d
Alleppee	Fair to fine plump clipped	1s 4d a 3s 4d
Tellicherry	Good to fine ...	1s 3d a 2s 3d
	Brownish ...	9d a 1s 3d
Mangalore	Good & fine, washed, bgt.	1s 6d a 2s 8d
Long Ceylon	Middling to good... ...	6d a 2s
CINNAMON 1sts	Ord. to fine pale quill ...	7½d a 1s 7d
2nds	,, ,, ,, ,, ...	7d a 1s 4d
3rds	,, ,, ,, ,, ...	6d a 1s 2d
4ths	Woody and hard	5½d a 11d
Chips ...	Fair to fine plant... ...	2½d a 7½d
COCOA, Ceylon	Bold to fine bold ...	106s a 115s 6d
...	Medium	95s a 105s
	Triage to ordinary ...	60s a 90s
COFFEE Ceylon Plantation	Bold to fine bold colory...	104s a 110s
	Middling to fine mid. ...	101s a 103s
	Low mid. and Low grown	95s a 98s
	Smalls	94s a 97s 6d
Native	Good ordinary	90s a 95s
Liberian ...	Small to bold	85s a 93s
East Indian ...	Bold to fine bold... ...	104s a 115s
	Medium to fine	100s a 105s
	Small	93s a 98s
Native	Good to fine ordinary ...	90s a 95s
COIR ROPE, Ceylon & Cochin	Mid. coarse to fine straight	£14 a £22 10s
FIBRE, Brush ...	Ord. to fine long straight	£15 5s a £28
Stuffing ...	Coarse to fine	£5 a £18
COIR YARN, Ceylon ...	Ordinary to superior ...	£13 a £30
Cochin ...	Ordinary to fine	£12 a £36
Do ...	Roping fair to good ...	£12 a £16
COLOMBO ROOT, sifted ...	Middling wormy to fine...	10s a 18s
CROTON SEEDS, sifted ...	Fair to fine fresh... ...	10s a 15s
GINGER, Cochin, Cut	Good to fine bold... ...	65s a 72s
,,	Small and medium ...	32s a 43s 6d
Rough	Fair to fine bold	21s a 34s
... ...	Small	21s a 23s
GUM ARABIC, Madras ...	Dark to fine pale ...	15s a 55s
NUX VOMICA ...	Fair to fine bold fresh ...	9s a 12s
	Small ordinary and fair...	6s a 8s 6d
MYRABOLANES Pale, ...	Good to fine picked ...	8s 9d a 9s 6d
	Common to middling ...	8s a 8s 6d
	Fair Coast...	8s 6d
Pickings	Burnt and defective ...	4s 9d a 6s 3d
OIL, CINNAMON ...	Fair to fine heavy ...	1s a 2s 6d
CITRONELLE ...	Bright & good flavour ...	⅝d a ¾d
LEMON GRASS ...	,, ,, ,, ...	1⅛d a 1¼d
ORCHELLA WEED ...	Mid. to fine, not woody...	20s a 33s
PEPPER, Malabar, blk. sifted	Fair to bold heavy }	5¾d a 6⅛d
Alleppee & Cochin ,,	,, good ,, }	
Tellicherry, White ...	,, ,, ,, ...	1s 6d a 1s 9d
PLUMBAGO Lump ...	Fair to fine bright bold...	15s a 19s
Chips ...	Middling to good small...	11s a 14s
dust ...	Slight foul to fine bright	9s a 11s 6d
...	Ordinary to fine bright ...	5s a 9s
RED WOOD	Fair and fine bold ...	£4 10s a £4 15s
SAPAN WOOD ...	Middling coated to good	£5 a £8
SANDAL WOOD, logs ...	Fair to good flavor ...	£30 a £58
Do. chips ...	Inferior to fine	£9 a £30
SENNA, Tinnevelly ...	Good to fine bold green...	5d a 8d
	Fair middling medium...	2d a 4d
	Common dark and small	1d a 2d
TURMERIC, Madras ...	Finger fair to fine bold [bright	15s a 16s
Do. ...	Mixed middling	14s a 15s
Do. ...	Bulbs	10s a 12s
Cochin ...	Finger	10s a 11s
VANILLOES, Mauritius & Bourbon, 1sts	Fine crystalised 6 a 9inch	18s a 25s
2nds	Foxy & reddish 5 a 8 ,,	15s a 20s
3rds	Lean & dry to middling under 6 inches ...	10s a 14s
4ths	Low, foxy, inferior and [pickings	3s a 8s 6d
FROM BOMBAY AND ZANZIBAR.		
ALOES, Soccotrine ...	Good and fine dry ...	£4 a £7
Zanzibar & Hepatic...	Common and good ...	40s a £5 5s
CHILLIES, Zanzibar ...	Fair to fine bright ...	35s a 38s
	Ordinary and middling...	30s a 33s

FROM BOMBAY AND ZANZIBAR.	QUALITY.	QUOTATIONS.
CLOVES, Zanzibar and Pemba, per lb }	Good and fine bright ...	5¾d a 6d
	Common dull to fair ...	5¼d a 5⅝d
Stems...	Common to good ...	1⅛d a 1¼d
COCULUS INDICUS	Fair ...	12s a 13s
GALLS, Bussorah & Turkey ℘ cwt. }	Fair to fine dark blue ...	52s 6d a 57s 6d
[cwt.	Good white and green...	40s a 50s
GUM AMMONIACUM per	Blocky to fine clean ...	20s a 50s
ANIMI, washed, ℘ cwt.	Picked fine pale in sorts,	£10 10s a £13
	part yellow and mixed	£9 a £10
	Bean & Pea size ditto ...	£5 a £8 10s
	amber and red bold ...	£8 a £11
scraped...	Medium & bold sorts ...	£4 a £7
ARABIC E.I. & Aden ..	Sorts	32s a 75s
per cwt. Ghatti ...	Sorts to fine pale ...	20s a 70s
Amrad cha	Good and fine pale ...	50s a 65s
	Reddish to pale brown ...	25s a 45s
ASSAFŒTIDA, per cwt.	Clean fair to fine ...	26s a 34s
	Slightly stony and foul ...	20s a 25s
KINO, per cwt.	Fair to fine bright ...	25s a 30s
MYRRH, picked ,,	Fair to fine pale ...	£5 a £6 10s
Aden sorts	Middling to good ...	72s 6d a 80s
OLIBANUM, drop per cwt.	Fair to fine white ...	40s a 55s
,,	Reddish to middling ...	27s 6d a 37s
pickings...	Middling to good pale ...	12s a 20s
siftings ...	Slightly foul to fine ...	10s a 15s
INDIARUBBER Mozambique, per lb. }	red hard ...	2s a 2s 6d
Ball & Sausage }	white softish ...	1s 5d a 2s
	unripe root ...	8d a 1s 6d
	liver ...	1s a 2s
FROM CALCUTTA AND CAPE OF GOOD HOPE.		
CASTOR OIL, 1sts per oz.	Nearly water white ...	4d a 4½d
2nds ,, ...	Fair and good pale ...	3⅝d a 3¾d
3rds ,, ...	Brown and brownish ...	3¼d a 3½d
INDIARUBBER Assam, per lb.	Good to fine ...	2s a 2s 6d
	Common foul and mixed	9d a 1s 10d
Rangoon ...	Fair to good clean ...	2s a 2s 4d
Madagascar	Good to fine pinky & white	2s 4d a 3s
	Fair to good black ...	1s 11d a 2s 2d
SAFFLOWER ...	Good to fine pinky ...	60s a 70s
	Middling to fair ...	40s a 60s
	Inferior and pickings ...	15s a 25s
TAMARINDS ...	Mid. to fine *black* not stony	10s a 12s 6d
	Stony and inferior ...	4s a 6s
FROM CAPE OF GOOD HOPE.		
ALOES, Cape, per cwt. ...	Fair dry to fine bright ...	23s a 24s
,, ...	Common & middling soft	12s a 23s
Natal ...	Fair to fine ...	none here
ARROWROOT Natal per lb.	Middling to fine ...	2½d a 3½d
FROM CHINA, JAPAN & THE EASTERN ISLANDS.		
CAMPHOR, China, ℘ cwt.	Good, pure, & dry white }	150s a 160s
Japan ...	,, ,, pink }	
GAMBIER, Cubes, cwt. ...	Ordinary to fine free ...	38s a 41s
	Pressed	nominal
Block [per lb.	Good ...	27s 3d
GUTTA PERCHA, genuine	Fine clean Banj & Maca- [sar	3s 6d a 4s 6d
Sumatra...	Barky to fair	2s a 3s 4d
Reboiled...	Common to fine clean ...	4d a 2s
White Borneo ...	Good to fine clean ...	1s 10d a 2s 9d
	Inferior and barky ...	1s 4d a 1s 9d
NUTMEGS, large, per lb...	57's a 80's, garbled ...	2s 8½d a 4s
Medium ...	83's a 95's ...	2s 7½d a 2s 8½d
Small ...	100's a 160's ...	2s a 2s 7d
MACE, per lb. ...	Pale reddish to fine pale	2s 8d a 3s 3d
	Ordinary to fair ...	2s 4d a 2s 7d
	Chips and dark ...	1s 10d a 2s 3d
RHUBARB, Sun dried, per lb.	Good to fine sound ...	1s 3d a 3s 2d
	Dark ordinary & middling	8d a 1s 3d
High dried ...	Good to fine ...	9d a 1s 1d
	Dark, rough & middling	3d a 7d
SAGO, Pearl, large, ℘ cwt.	Fair to fine ...	17s a 17s 6d
medium ...	,, ,, ,, ...	16s a 17s 6d
small ...	,, ,, ,, ...	12s a 13s 6d
Flour [per lb.	Good pinky to white ...	8s a 12s
TAPIOCA, Penang Flake	Fair to fine ...	1¾d a 2½d
Singapore ...	,, ,, ...	1⅜d a 2¼d
Flour ...	,, ,, ...	10s a 16
Pearl ...	Bullet, per cwt. ...	22s
	Medium ,, ...	17s a 18s 6d
	Seed ,, ...	16s 6d a 17s

THE MAGAZINE

OF

THE SCHOOL OF AGRICULTURE,

COLOMBO.

Added as a Supplement monthly to the "TROPICAL AGRICULTURIST."

The following pages include the contents of the *Magazine of the School of Agriculture* for July :—

AGRICULTURAL THEORIES AND FACTS.

BEFORE Science and especially Chemistry lent its aid to explain the nutrition and feeding habits of plants, there was much speculation on these subjects, and a number of theories were put forward, which in the light of our modern scientific knowledge appear absurd enough, but judged with regard to the position of Agricultural science at the time they were propounded, are sufficiently plausible. We may notice among others the Excretory Theory of De Candolle, which after being long abandoned, a countryman of the author who came to this Island professing ability to cure the dreadful coffee-leaf-disease, was bold enough to revive. De Candolle founded his theory not only on a false analogy but on what we now know are fictions. Having observed that the excretions of animals were found useful and beneficial as supplying the food ingredients of plants, and that an animal will not thrive and indeed will steadily decline in health if it lived surrounded by its own excrement, he argued that certain families of plants could not continue to grow on the same land for an unlimited period owing to their excreting certain substances which are hurtful to the individuals of these families; but that this excrementitious matter would not be hurtful to other families, and in fact would be found beneficial. Clover or Beans for instance could not be grown continuously for any length of time so as to produce healthy crops, but when grown at intervals together with cereals &c. they showed no signs of deterioration. This according to De Candolle was owing to the Leguminosæ excreting certain substances which, accumulating in the soil, became a source of harm—the crop then growing in what may be said to be unsanitary conditions; but the excretions of the Leguminosæ were supposed to benefit the Gramineæ and *vice versa*. It is granted that any crop grown continuously on the same land without artificial aids, to the exclusion of all others, will eventually become less productive and more weakly and unhealthy; but what is the reason of this? The theory we are at present concerned with, plausible as it appeared in De Candolle's day, did not continue so for long; for while the Botanist would not acknowledge that plants were capable of excreting substances through their roots (as De Candolle supposed), it was further objected by those who gave any attention to the matter, or made any attempt to test the theory, that no excretions of a noxious character could be pointed out as accumulating in a soil under the conditions indicated. Thus the excretory theory was shown to be based on suppositions and had no facts to support it. It was therefore no wonder that after a little time the mere mention of it was received with ridicule

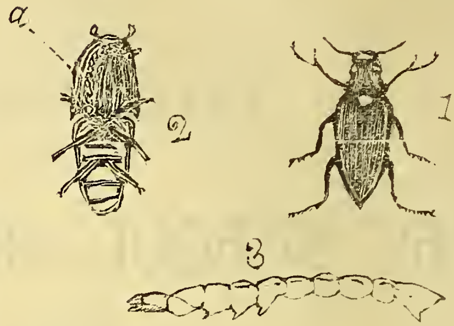
Another theory, which after being accepted with credulity inspired by the distinguished author of it, was also destined to be abandoned before long, was the Mineral Theory of Liebig. Baron Liebig held that plants got all their nitrogen from the atmosphere which was an unlimited source of this most important element of plant-food; the mineral

food which was derived from the soil was however liable to exhaustion, and hence the only manures a plant would need for its healthy growth were of a mineral nature. Liebig was so convinced of this that he went the length of preparing a standard manure which came to be most extensively sold for a time; but alas, further knowledge not only exposed the falsity of the Mineral Theory, but also blasted the prospects of a thriving trade. It was Liebig, however, who in spite of his mistakes brought home to Agriculturists the need they had for the help that science could give, and how Chemistry would be able to help them a great deal; and the year 1840 will always be remembered by Agriculturists as an important one, for in this year Liebig's great work was published. "If a person were asked," says Dr. Lawes, "what events had produced the greatest influence on Agriculture in Great Britain during the last half century, he would, undoubtedly, say the establishment of the Royal Agricultural Society of England, and the publication of Baron Liebig's work upon Agricultural Chemistry."

It is idle to theorize unless theory can stand the test of experiment, and it was only after Boussingault started his experiments in France on his own farm, followed by Sir John Lawes at Rothamstead in Hertfordshire, that the facts of Agricultural Chemistry began to be established. Nothing could have reached the perfection of experimentation but energy and perseverance such as Dr. Lawes possessed. He is essentially an experimentalist, and every statement he puts forward is the result of close observation and has stood the crucial test of careful experiment under his own eye in his outdoor laboratory at Rothamstead. Hence it is that we would rather listen to what he has to say, innocent as he is of any distinctions or honours gained by a laborious University course than those of any other man. It is only last month that he furnished us with an epitome of the results of his experiments which have been given in detail by Dr. Feam, the Botanist to the Royal Agricultural Society, in the volume he published not many years ago on the Rothamstead experiments. This epitome as giving information as to how crops feed is worthy the perusal and study of every Agriculturist. With regard to the much vexed question as to the inability of crops to grow continually, yet in a healthy condition, on the same land without artificial aids, we now know that this depends on the peculiar feeding habits of different families of plants in virtue of which one kind of plant affects certain ingredients of plant-food and takes these up in larger proportions to others; the extent to which roots penetrate into the ground and the capability they have for availing themselves of food in the soil. However fertile a soil, the resources of plant food as far as a particular crop is concerned are bound to be taxed to an undue extent where that crop is grown on the same land without the intervention of a crop of a different species or without artificial aids—especially in the case of agricultural crops that have their produce carried off the land in some form. Thus the peculiar feeding habits of plants—discovered by careful experiments—have explained those conditions which Theorists vainly endeavoured to account for by such hypotheses as those which the Excretory Theory and the Mineral Theory were founded on.

LIFE HISTORIES OF INSECTS INJURIOUS TO VEGETATION IN CEYLON.

By Aba.



1. *Elater Lineatus*, Linn. (Sin: Tokka, ටොක්කා.) 2. Underside of beetle showing the situation of the spine, *a*. 3. The grub or "wireworm."

THE WIREWORM.

The wireworms are the *Larvæ* of several species of a coleopterous insect *(Elater)* commonly known as the Skip Jack or Click Beetle from its power of regaining its position when laid on its back by a spring or skip, accompanied by a sharp click. The name *Tokka* by which it is known to the Sinhalese is also descriptive of this sound or click.

The leading character of this insect is a strong spine (*a* Fig. 2) situated beneath the thorax, which fits at pleasure into a small cavity on the upper part of the abdomen. It is by means of this that the beetle is enabled to spring up with great force and agility and regain its natural position when laid on its back.

Wireworms are so called on account of their likeness in toughness and shape to a piece of wire. They are very smooth and shining and somewhat cylindrical, and perhaps resemble bits of wire that have been compressed, more than anything else. The colour is a sort of ochreous yellow, which turns into a darker tint after death. Wireworms have three pairs of legs and have also a sucker-foot below the tail.

Miss Ormerod says that "the egg from which this grub is hatched is laid either in the earth close to the root of a plant, or between the sheathing-leaves near the base of the stem. On being hatched the grub or 'wireworm' eats into the stem just above the true root, about an inch below the surface of the ground, and sometimes eats its way up the middle of the stalk, even above the surface of the earth."

"The wireworms are said to live five years in the grub state, but the length of time probably depends on the supply of food. Where they are well fed, it is supposed that they only take about three years before changing to the pupa. But however this may be, with the exception of any temporary pause in winter (when they go down deeper and deeper into the ground as the frost increases), they feed voraciously near the surface till the time has come to turn into the chrysalis (or pupa). Then they go deep into the soil and form an earth-cell in which they change, and from which the perfect Beetle comes up through

the earth in two or three weeks, probably appearing about the first week of August; or they may pass the winter in this state, and the beetles develop from the chrysalis in the following spring."

(To be continued.)

INDIGENOUS FOOD PRODUCTS: CULTIVATED AND WILD. IX.

By W. A. De Silva.

Anacardiaceæ.

20. *Mangifera Indica,* L. Sin. Amba.

This is the mango tree which grows commonly in the warm parts of the island. There are several varieties of this species, and only one appears to be Indigenous, namely, M. Zeylanica known in Sinhalese as *Atamba.* This tree is seldom cultivated and grows wild, attaining very large dimensions, sometimes growing to a height of about a hundred feet, while the trunk reaches the circumference of about twenty feet. The stem is generally erect and straight with few branches and numerous twigs, the leaves being placed very near each other, and the petioles which are short having a rounded form at the place of attachment to the branch. The leaves are from eight to twelve inches long, of a dark green colour, with entire margins and of a lanceolate shape. The leaves of the indigenous variety are darker in colour than those of others. A peculiar acid principle is formed in the whole plant, particularly in the fruits and leaves. The flowers are large panicles and the fruits are in clusters, a single cluster sometimes contains no less than twenty fruits. The fruit is a drupe and in the indigenous variety is about the size of an egg. The seed is comparatively large and the fleshy portion or the mesocarp is very acid when unripe. When the fruit ripens the mesocarp softens and turns into a yellow colour. In this state it contains much sugary matter with a little of the acid property, and the mass contains much fibre.

The mesocarp of the ripe fruit is eaten; while the unripe ones are generally used for making chutneys, drying with salt, and flavouring curries. In the process of drying with salt, the fruits are first split into two and the kernel of the seed is removed, leaving the shell attached to the fleshy portion—the outer skin too being allowed to remain. After this, parallel incisions are made in the fleshy portion, powdered salt is sprinkled over, and the whole thing after being fermented for a day, is dried and put by for use. Mango thus prepared is kept without being spoilt for a long time. After the skin and stone are removed, the fruit boiled in syrup of sugar makes a fine preserve.

The wood of this tree is used for a variety of purposes, especially as planks for packages, &c., but it is not very durable, as it is easily attacked by worms.

The bark contains tan, but it is so much mixed with resinous matter and acid juice that it can't be economically extracted; still it is used for this purpose to some extent in India.

21. *Spondias Mangifera,* Willd; Sin. Embarella.

This is a tree met with in different parts of Ceylon, but not very common. The stem is round and grows to a good height with but few branches. The leaves are compound (pinnate). The fruit is green and is of the size of the mango. In taste too it is very much like the mango, but there is a peculiar flavour in it which is not very agreeable. A great deal of it is used for pickles and preserves. The outer-covering and the seed form a larger proportion of the fruit than in the mango.

The bark of the tree is used medicinally among native Medical Practitioners and is considered to be efficacious in Rheumatism.

CRUDE THEORIES REGARDING THE ORIGIN OF CERTAIN PLANTS.

By W. A. De Silva.

Under this heading I propose to deal with certain notions, still current in parts of the Island, which have been retailed to me in the villages, regarding the origin of the commonest among the food-producing plants of Ceylon. Most of these, though handed down by tradition and oft repeated, are by no means considered to be the true explanation; and I doubt whether even the most ignorant among the villagers give credit to these accounts. I should perhaps apologise therefore for electing to write on a subject of this nature, a consideration of which some would deem unprofitable. But I would urge in extenuation, firstly, that a subject of this kind would prove a not unpleasant change from those dealing with the hard scientific facts of Agriculture with which this Magazine abounds; secondly, that my paper should not prove uninteresting to those who wish to have a knowledge of all things bearing on local Agriculture, even the crudest and most antiquated notions that originated with the superstitious and ignorant tillers of the soil in the earliest times; and thirdly, that there is a certain significance about these theories which it would be interesting to trace.

To start with I will take up Paddy or the rice-producing plant, since rice is the principal food of the natives of this Island. My story relates how in the beginning of this *Kalpa* the earth was inhabited by two beings who descended to our sphere from the *Brahmaloka* (Heaven), and how they and their children had at first no difficulty in obtaining their food, as the soil itself was sweet and savory, and they ate of it gladly and thankfully. But as time went on, those qualities which made the soil palatable ceased to appear, and a growth which may be likened to an edible fungus sprung up which these early inhabitants were put to the trouble of collecting as their food; and hence, it is said, the necessity for work arose for the reason that wickedness began to appear among the members of this first earthly family, who had originally nothing but good in their hearts. And as the world grew older its inhabitants grew more wicked, and in proportion the greater was the difficulty in obtaining food. For the first growth which had merely to be collected and eaten gave place to another—a species of plant bearing naked grain—

in other words, rice, which the people were put to the additional trouble of collecting and cooking before it was fit for eating. Later on as the inhabitants grew more numerous and more wicked, the "rice" developed a covering or husk and evolved itself into paddy, thereby causing man greater trouble in having to separate the grain from the husk. But this was not the last of his troubles to the future Agriculturist, for now the paddy plant ceased to grow perennially with no help or attention on the part of man, and then came the necessity for the preparation of fields and the sowing of the grain in order to obtain the crop. This is the story of the paddy plant which as such has to my mind a charming simplicity about it. But on looking closer we will find a moral significance in it, inasmuch as it attempts to show how labour, trouble and care were the outcome of evil, and increased in proportion as the human race grew in wickedness. Again, there is as it were a scientific glimmer about the account, for it is evidently intended to indicate after a crude fashion that law of Agriculture according to which deterioration must eventually result when no attention is given to the soil, so that those qualities may be preserved upon which certain desirable effects depend.

ANIMAL PARASITES.

Another parasite of the Tæniada or Tapeworm family is the *Tænia Echinococcus* which occurs in man and the dog. In the dog it exists in the adult form as the full-grown tapeworm; and in man as the scolex, that is in the cystic form. This latter form, however, exists in other animals than man—in horses and cattle for instance. The worm itself is a small one consisting of 4 segments, one forming the head and three others the rest of the body. The eggs of the worm when taken into the alimentary canal of man gives exit to the embryo which bores its way till it occupies the position it chooses to establish itself in: here it develops from the bladder or cyst, the presence of which in man causes the disease known to medical men as "hydatids." These cysts may occur in the liver, lungs, &c. Smaller cysts may occur within a large one, which latter sometimes produces buds on its outside. Inside the bladder is found a fluid which on shaking assumes a turgid appearance. In the sediment of this fluid are found the embryo worms. In some cases a cyst when cut open is found to contain pus in which one odd hooklet or two indicate the embryo. It is needless to say that this parasite is most fatal to man. The disease is most common in Iceland, and is also known to occur pretty frequently in Victoria. Its presence in Iceland to so large an extent is explained by the close association of men and dogs, owing to the latter being so much used for sledge-drawing in the ice-bound regions of northern latitudes. The foolish habit which some persons have of kissing pet dogs cannot be sufficiently condemned when we consider that these animals lick themselves all over their bodies, and when suffering from tape-worm may carry in their muzzles the eggs of the Tænia Echinococcus which are to produce the future "hydatids."

All dogs suspected of suffering from tape-worm should be starved for twelve hours, dosed first with castor oil, and then areca-nut (dose from ½ to 2 drachms). Six or eight hours after more castor oil should be administered to remove the dead worms. The great point is that the head should be removed, for the worm will continue to grow by producing proglottides or segments. The head which is very small, appearing like a little knob at the end of a thread, should be looked for. Everything passed out should be mixed with straw and burnt. The medicine often requires to be administered once a week for two or three weeks before the desired effect is produced.

Mr. Hutcheon, C.V.S., the Government Veterinarian of Cape Colony writing on measles in the pig caused by the presence of *cysticercus cellulosus*, the Scolex of *Tænia Solium*, the adult tape-worm in man, which we were noticing in our April number, says that if salt and sulphur be given systematically, they would act as preventative remedies, attacking the tape-worm ova while they remain in the digestive organs, and before they become distributed as cysts throughout the circular tissue of the body.

With regard to measles, Prof. Cobbold recommends the removal of affected pigs from all sources of infection, and placing them in a clean sty for 6 or 8 months: at the expiration of that time all the *Cysticerci* or measles that existed in the pigs at the time of transfer will have perished, and the flesh of the animals may be then eaten with impunity.

AN ACCOUNT OF THE MATARA MARKET GARDEN.

(Communicated.)

This garden was opened in September 1887. It was not originally intended to be either a market or an Experimental Garden, but as the following short account of it will show, it has gradually developed into a combination of both.

It was started for the experimental cultivation of dholl, and about a quarter of an acre only was fenced off (with the permission of the Local Board) from the Esplanade between the Star Fort and the Police Station for the purpose.

Dholl is a sort of pea or gram which on account of its being both highly productive as a plant, and nutritious as food, was thought desirable, should be introduced as a product for general cultivation. It was no new product, for it had already been successfully cultivated in several parts of the Island, nor was it even altogether unknown as an article of food, small quantities of the imported grain being generally procurable in any large native bazaar. It was however not sufficiently common nor enough known to be as popular an item of food as it deserved. A knowledge of the case with which it can be cultivated and of the profit to be derived from it, would, it was thought, lead to its general cultivation. The only disadvantage under which it started in comparison with most chena products was the length of time that elapses between its sowing time and harvest, namely twelve months. It was not thought that this would be an insuperable objection to its extended cultivation; but experience has shown that it was a much graver

objection than was anticipated. The Sinhalese villager, whether chena cultivator or not, requires "quick returns and small profits," and to this must be attributed his failure to at once appreciate dholl at its real worth, and our consequent failure as yet to introduce its cultivation on any extensive scale. A patch of it has now thrived with very little care, for three successive years in the garden, and it is still hoped that gradually profit will overcome prejudice, and that dholl may hereafter become one of the principal garden products of the district.

Shortly after dholl was sown, it was found expedient, partly from a desire to extend the usefulness of the garden, and partly from the necessity of finding continous employment for the coolie in charge, to plant a small part of the garden with a few common vegetables. A few brinjals, bandakas and chillies were sown. These thrived so well that some common English vegetables were than tried. Lettuces, radishes and beetroot were all successfully cultivated, so that early in 1888 it became apparent that if further experimental cultivation was to be carried on, an extension of the garden was necessary. The quarter of an acre was thus extended to half an acre, and very shortly afterwards when cotton cultivation was proposed, the extent had again to be doubled.

While both Dholl and Cotton were thriving, vegetables, both native and English, continued to flourish, so much so, that early in the following year it was decided to enclose the whole of the remaining avilable space, a triangle in extent about 2 acres bounded on one side by a backwater of the river, and on the other two by the high road. A portion of this bordering the river being low swampy ground has to be raised three or four feet to be made fit for continuous cultivation. Sweepings and scavengers' collections deposited here have already reclaimed a large portion of this, and in another year it is hoped the whole extent of the garden will be available for cultivation.

The expenditure in the garden has been merely nominal, as the labour of four prisoners has almost uninterruptedly been supplied free. An oreseer at R10 a month and a garden coolie at R7·50, with the cost of seeds and tools have been the principal items of expenditure, which have been almost met by the sale of produce. The vegetables which have been found to grow best are tomatoes, lettuce, radishes and beetroot, while celery, cabbages, and carrots, though they grew fairly well, cannot be said to have been a success.

In 1889, Cotton and Dholl had both passed the experimental stage of cultivation, vegetables, both native and English, had been successfully tried, fruit trees had been kindly presented by the Director of the Royal Botanic Gardens at Peradeniya, and all that appeared necessary was to make the garden more attractive to visitors. This was attempted by the introduction of English flowers. Some of these, notably Zinias, Balsams, and Mignonette were grown most successfully, and the garden is now almost continually gaily coloured with rows of flowers edging each walk.

During the present year it has been found necessary to employ an additional coolie, and the growing importance of the garden has shown that it will shortly be necessary to appoint some superior officer to take charge of the whole. With this view, a gardener's cottage in place of the miserable shanty in which the coolie has hitherto lived, is now being built. It is a substantial building of stone, and will, it is hoped be in time, in trimness and picturesqueness the very model of what a gardener's cottage should be.

With a garden already in a flourishing condition, and a gardener's house provided, it is hoped that ere long the Director of the Royal Botanic Gardens may be able to extend his sphere of usefulness in lowcountry cultivation by taking over this as a Government Garden, or by securing for it some small portion of the Government Grant voted for Botanical and Experimental Gardens in the Island generally. Out of five gardens now in his charge, there appear to be only two in the lowcountry, namely at Anuradhapura and Henaratgoda, so that it is not much to ask that the mere pay of a gardener for another lowcountry garden, and that in a district noted for its fertility, should be granted. The Head Gardener's attention and power to do good would not be confined to this garden alone; there are in the district four other gardens, at present in the charge of Mudaliyars or some subordinate headmen, in which cotton and dholl are still being tried, and which with occasional visits from a qualified gardener could be vastly improved.

A combination of this enterprise with that of Poultry farming would not seem impracticable, and if a suitable man can be found for the post, it is proposed to construct a spacious poultry yard, enclosed by wire netting, at the back of the gardener's cottage. In both schemes there is no doubt room for profit as well as philanthropy.

NOTES FROM A TRAVELLER'S DIARY.

I profoundly regret that I was unable to send my instalment of notes for the June number, and that my promise in my May notes should have so soon illustrated the proverbial untruthfulness of Travellers. The fact is that I was much engaged last month at Nikaweratiya, and when I found leisure at Wariyapola, I also found that I was too late for the June issue, and that the Magazine must have already been in the hands of the printer.

I find that the weeding of paddy-land in the Kandyan Districts, is confined only to certain areas. It seems to be nowhere carried on in the Province of Uva, and but to a limited extent in the Central Province. But I have never seen weeding more carefully done than in Kadugannawa District.

At Tulpegoda, a village in Lower Hewaheta, about twelve miles distant from Kandy, I was shown a liedda of paddy in the midst of a large tract of paddy-land, where the difference in the plants from those in the surrounding fields was quite striking. The plants in this liedda were hardy and erect, and the ears on them were well set with plump grain. The explanation given me by the owner was that these plants had been transplanted into their present situation. This owner seemed quite proud of his successful experiment which he intends repeating on a larger scale.

I find that Saltpetre (Potassium Nitrate) is prepared from the dung of bats in some parts of the island. The process as explained to me is very simple. The dung is dissolved in water with some clay obtained from ant-hills, and the mixture is strained; after which the liquid is boiled and left to cool, when the saltpetre separates out in crystals. This is how the natives obtained their saltpetre in past times for the preparation of gunpowder.

A good many coffee lands which one time brought wealth to their owners are now thick lantana jungles, and the habitat of the wild boar and jackal. When coffee was king they say that gambling and drinking were far more common than they are now in the Kandyan villages: and an amusing story was retailed to me of these times which, apocryphal as it may seem, I was assured is a true one.

It seems that two Kandyan coffee landowners were at a loss how to dispose of the superfluous rupees which they possessed, and the novelty of the situation suggested to them an equally novel mode of relieving themselves of their useless cash, while at the same time it was intended to impress the world with an idea of the abundance of their possessions. These illustrious Agriculturists sought the interior of a hotel (which alas was a too common *rendezvous* for successful coffee planters), and after a sumptuous repast produced Manilla cigars—wrapped in silver foil? No, but in genuine "ten rupee notes." They could not, however, have been educated smokers, for they smoked their cigars with the foil round them, and even drew the attention of those present to the strange proceeding! Is there a better illustration of the height of smallmindedness? Doubtless, these two gentlemen, who I am assured are still alive, eking out an existance on a bit of paddy land, have by this learned the art of economy and —smoking!

Cotton cultivation is carried on to a large extent in Dumbara and Matale Districts by both Europeans and Natives. Lower Dumbara is well known for its rich soil, and a good deal of tobacco is also grown there. Several varieties of cotton have been planted, such as Sea Island, Kidney, New Orleans and Egyptian. Hunuketale plantation, belonging to the Spinning and Weaving Company, is also in the Matale District. The estate is 120 acres in extent, and represents several varieties of cotton. Egyptian has, however, been found best suited to the district, and there are 40 acres fully planted with this variety which grows freely and bears profusely. Two crops are obtained: the plants being pruned after the first crop, and pulled up after the second. Kidney cotton also grows well, but its yield is not so good as the Egyptian. New Orleans does not seem to do very well in these parts. Sea Island succeeds better in Dumbara owing to its humid climate, the dry climate of Matale favouring Egyptian. The seeds of Sea Island is said to deteriorate in Dumbara, perhaps, owing to the want of sufficient saline matter in the soil. Planting and pruning at the proper time seem to be the secrets of successful cultivation.

OCCASIONAL NOTES.

Mr. J. P. Lewis, in his Administration Report of the Vavuniyanvilankulam District, writes of cotton:—"Some Fiji or Kidney, and New Orleans cotton was received, and was distributed to the headmen to be sown. The results of the experiment as regards the former variety were unfavourable, a large proportion of the seed not having come up, but the New Orleans variety of cotton seems likely to do well." Mr. M. S. Crawford, in his report on the Mannar District, says of cotton:—"Several lots of cotton seed were distributed and sown, but failed from want of rain. The soil of the district is admirably suited to the growth of cotton, and considerable quantities of the native variety are grown in the island, where it is used for the manufacture of nets. No new areas of cultivation were opened during the year."

Cattle disease seems to have caused much loss during the past year in the Mannar District. It is reported that cattle suffered much from a disease called *Kaliccal* (purging), and large numbers, particularly buffaloes, died. The disease is supposed to have been introduced from India. No remedies were tried. On this subject Mr. Lewis reports from the Mullaittivu District that the total number of deaths during the year 1889 were 266 buffaloes and 107 neat cattle. During the visitation of the epidemic over 40 per cent of the cattle of the district were carried off by it.

The following extract regarding the introduction of new varieties of cotton into the island, is from the Administration Report for 1889 of the Government Agent of the Western Province:—

COTTON.—An attempt has been made to introduce cotton cultivation, and, as in the case of Liberian coffee and other products, the special patronage of Government has been invoked to assist it.

If the Government or the promoters would pay the cost of all the experiments, I think the attempt to introduce it would be very laudable; but so far as I can judge what is done is this:—The native land-owner is assured by the Government Agent or the Assistant Government Agent that cotton cultivation is a most remunerative speculation, and he is induced to clear and prepare his land. This he does at some considerable cost, which he himself has to bear. He is then furnished with imported seed, which he is told is of a very excellent variety imported at great expense. Unfortunately, such seed has hitherto generally turned out to be very bad, and often utterly unsuited to the climate. Only about ten per cent. grows and produces a crop. This has to be watched and protected from rats and other enemies at some cost, and when the cotton is picked it is taken over by the persons who provided the seed, and paid for at a rate which could not possibly repay the producer even if he had a most magnificent crop, but which under all the circumstances leaves him a certain and considerable loser. If he complains, he will probably be told that everyone regrets that the description of seed supplied to him has been found not to be that best suited to the Colony, and he is advised to try a different variety which has just arrived, and is sure to be successful, and will be given to him remarkably cheap.

In my opinion, as I have already reported, the country kapok is the best suited for the country. It will grow well almost anywhere, and if the cotton when picked is well paid for, the industry will soon extend.

It would, I think, be good policy for the promoters of the Spinning and Weaving Company to pay three or four times the value of cotton at first, in order to stimulate its cultivation. Fist attempts to grow a commodity are always the most expensive. When the cultivation is well established, the cost of production will be reduced, and the ordinary laws of supply and demand will soon operate.

If the Government wish to assist the cultivation of this or of any other variety of cotton, a fairly large grant should be made to introduce it thoroughly and in earnest into some such districts as the Bintenna or the Kolonna and Meda Korales in Sabaragamuwa, but such attempts as have hitherto been made will, in my humble opinion, always fail, and do more to check than extend the cultivation of a product which, I believe, if once established would be of special benefit to the Island.

This complaint of bad seed comes from most parts of the Island, and it is a pity some trials were not previously made to test the value of the seed before distributing it to the villagers, who having once formed a bad opinion, will not easily be made to change it. Now that reports come from Germany that a sugar fifteen times sweeter than that from the cane, and twenty times sweeter than that from beet, can be extracted from cotton seed, there is all the more reason to encourage the extention of cotton-cultivation.

The visit of Mr. Lipton to Ceylon will be remembered for the great push that will be given to the trade in Ceylon tea. "The great tea-man" as he is now called has invested many thousands of pounds in tea-estates in the Island, the produce of which will be almost literally sown broadcast over a large fraction of the earth's surface. All who have lived any time in Edinboro' or Glasgow will be familiar with "Lipton's," where one got the best value for his money, and where business was carried on on the strictest principles. Saturday night at Lipton's used to be a great day for the poorer classes who flocked in crowds to avail themselves of the opportunity to get their groceries at reduced prices: and Lipton's monster cheese will not be forgotten in a hurry by the many who congregated at his windows in North Bridge Street to see, and read the particulars of the manufacture of, the cheese which Her Majesty was obliged to gracefully decline.

It is more than surprising that no one has started the idea of establishing dyeing and cleaning works in Ceylon, considering the extent to which such a business is certain to be patronised. What a saving in clothes there would be! If cleaning and re-dyeing of clothes be considered necessary in the West, how much greater is the need for such operations in the East, where the dust and heat do so much to soil dress material and cause it to fade. Dark clothes which have become dusty and faded, in half the time they do in a less trying climate, to a degree beyond remedy by the ordinary household methods, if sent to such an establishment as Puller's and subjected to certain chemical processes, will return with the cleanliness, freshness and original gloss of a new article. What an advantage this would be to those whose means are limited! It is high time that cleaning, dyeing, and even bleaching works were established in a growing city like Colombo.

The cultivation of new varieties of Potatoes has been attempted in Nuwara Eliya. In the case of Aberdeen Kidneys, with 56 lbs. of seed a crop of 510 lbs. was got. Mr. Le Mesurier, Government Agent, had a good return with Tasmanian seed, and is of opinion that potatoes can be grown to perfection in Nuwara Eliya. The question suggests itself as to who first attempted the growth of potatoes in Ceylon. We remember reading in a local newspaper some years ago that Mr. Lorenz, the father of Mr. Advocate C. A. Lorenz, was the first to experiment in potato growing when in Matara. It would be interesting to know the details of these experiments.

GENERAL ITEMS.

Dr. James Clarke, M. A., PH. D., lately attached to the British Museum, has been appointed Professor of Natural History in the Downton College of Agriculture. Downton bids fair to be the leading College of Agriculture in England, to judge from the successes its students are gaining at the public competitive examinations in Agricultural Science.

The copyright of the well-known series of "Hand-books of the Farm" which are acknowledged to be the most valuable collection of text-books on the various branches of Agriculture, brought out under the superintendence of the late John Chalmers Morton, has been purchased by Messrs. Vinton & Co., the Agricultural and Sporting publishers of New Bridge Street, London.

The appointment of Agricultural Instructors is not peculiar to Ceylon. A Government Commission instituted to inquire into the condition of Agriculture in the Netherlands, and to suggest the best means of improving it, advise the appointment of "special government officials to be called Agricultural Instructors."

The number of applications for protection of Agricultural inventions in Great Britain amounted for the year 1889 to 21,000.

Professor Brown writing of Influenza in horses, says that good nursing, the administration of small doses of salines—as sulphate of magnesia—occasional employment of stimulating liniments to the throat and chest, and, in the convalescent stage, liberal rations, with tonics, constitute the favourite and successful system of treatment of influenza. Bleeding, purging and blistering, he says, which are the sheet anchors of the medicine man of the old school, are means which, in this disease, only tend to increase the prostration, and defeat the restorative efforts of Nature.

The latest report on the prospects of the Indian wheat crop for the season 1889-90, states that the failure of the winter rains has told severely on

the unirrigated wheat crop of the Punjab and the North-Western Provinces and Oudh, and an indifferent harvest must be looked for in about one-half the total area sown in the two provinces. In Bengal conditions are better than last year as regards both area and outturn. In the Central Provinces an average crop on an average area will probably be secured. In Berar a smaller area than usual has to be sown, and the outturn as reported will be poor. In the Bombay Presidency there is a considerable decrease in area; the Deccan crop will be a short one, but a fair harvest is anticipated in Gujarat and the Caranatic. In Sindh a larger area than usual has been put under wheat, and prospects are favourable.

Fruit-evaporation is carried on to an enormous extent in America, especially in New York State and California. The fruits evaporated are principally apples, but nearly every fruit is utilized. The value of evaporated fruit from California alone amounted in 1888 to nearly half a million pounds sterling. It takes 8 lb. of fresh fruit to make 1 lb. of evaporated apples. We get an idea of the work entailed in the operation of fruit drying and the scale on which it is carried out by the following particulars regarding New York State:—In 1888, 250 million lbs. of green apples and 50 thousand quarts of raspberries were operated upon, which produced about 40 thousand lbs. of evaporated fruit, valued at nearly 30 thousand pounds sterling. During the operation 19 thousand tons of coal were burnt in 1,500 drying-houses, and 45,000 hands were employed.

Babu Atal Krishna Ray, a graduate of Cirencester, has published a small work on the improvement of cattle in India. The evils caused by neglecting the principles of breeding and good feeding are, he says, so great in India, that they are almost beyond remedy.

The Agricultural Journal of Cape Colony of the 10th April contains much information under the headings of cultivation of sugar sorghum for manufacture of sugar in Cape Colony, steeping of grain in bluestone solution, measles in pig, cheese-making, phylloxera, cultivation of vines of pleuro-pneumonia, agricultural prospects, &c.

The results of experiments to test the value of woodshavings as litter for cattle have been published. They are recommended for softness, dryness and cleanliness; while with regard to manurial value, they contain more nitrogen and phosphoric acid though less potash than straw.

Dr. Weismann states that the horse and bear attain an age of 50 years at the outside; the lion lives about 35 years, the wildboar 25, the sheep 15, the fox 14, the hare 10, the squirrel and mouse 6 years. On the other hand, whales live for some hundreds of years, and elephants for 200 years. The shortest life is found in the imagos of certain mayflies which only live four or five hours.

Horse-shoeing even in England is considered to be in a very backward state. A writer in the Royal Agricultural Society's Journal says that farriers as a body are sadly ignorant of the essential principles of their art, and valuable horses are often liable to be injured in consequence. The Worshipful Company of Farriers of London have just formulated an important national scheme for the improvement of farriery by the examination and registration of shoeing smiths, an example that might well be imitated.

The sweet potato (convolvulus batata) is a great staple in Natal, being much valued for its agreeable and nutritive qualities as food, growing luxuriantly everywhere, especially on light sandy soils. There is nothing better for livestock of all kinds than this useful root.

We have to thank Mr. Van Starrex, of Crystal Hill, Matale, for seeds of Anatto, Croton-oil plant, and the Musk plant. Our thanks are also due to Mr. H. D. Lewis, sub-inspector of schools, for seeds of Sun hemp and Cuttack paddy.

We acknowledge with thanks the receipt of the St. Thomas' College Magazine for May.